Vol. XXVIII. Part 3.

NATIONAL MUSEUM OF VICTORIA

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NUMBER

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NATIONAL MUSEUM OF VICTORIA

THE JOURNAL

OF

THE DEPARTMENT OF AGRICULTURE

VICTORIA, AUSTRALIA.

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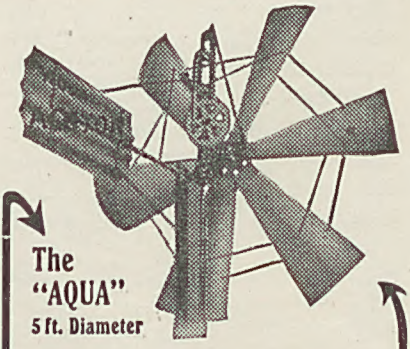

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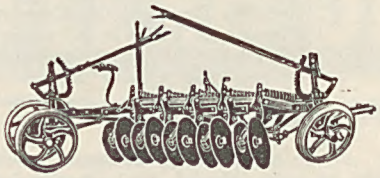

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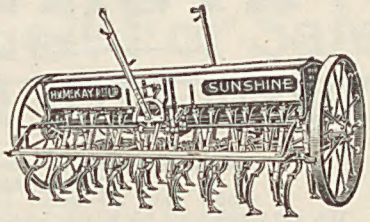

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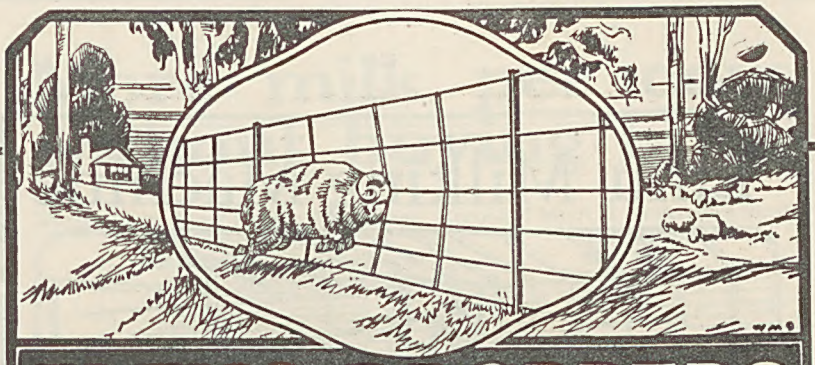

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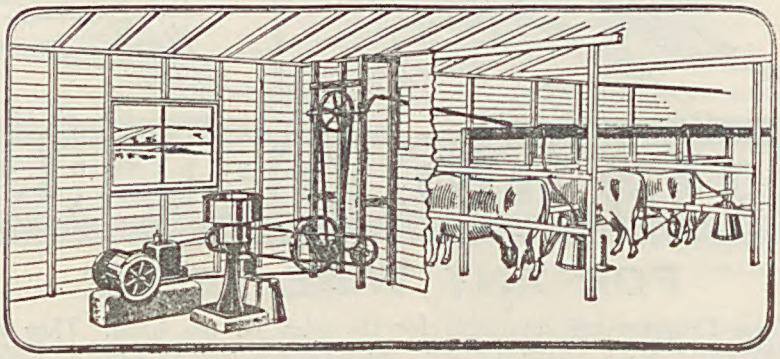

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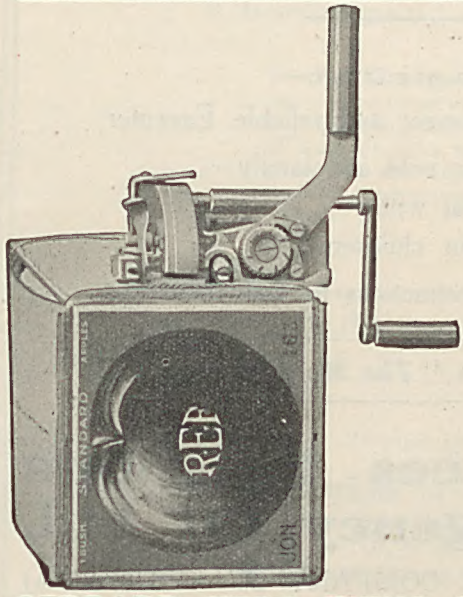

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OF

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   Dam .. .. .. Victoria Piebe
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   Dam .. .. .. Victoria Oakbell
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3. *Born* .. .. .. 14th August, 1929
   Sire .. Victoria Joyous Mercedes
   Dam .. .. Dominion Woodnymph
   21 Guineas

4. *Born* .. .. .. 12th August, 1923
   Sire .. .. .. Victoria Topnote
   Dam .. .. Victoria Freemartin
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   Dam .. .. .. Victoria Carina
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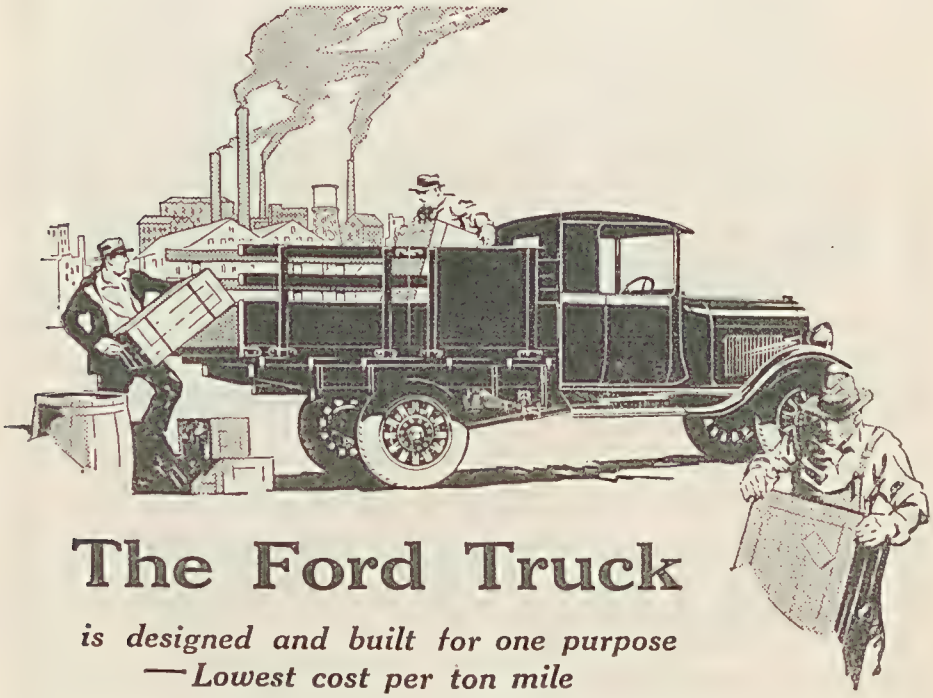

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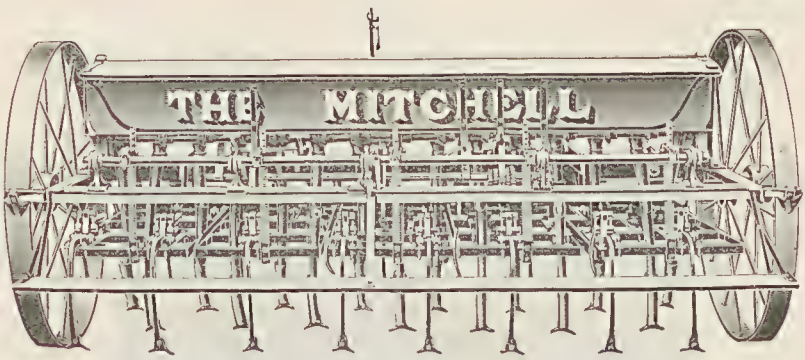

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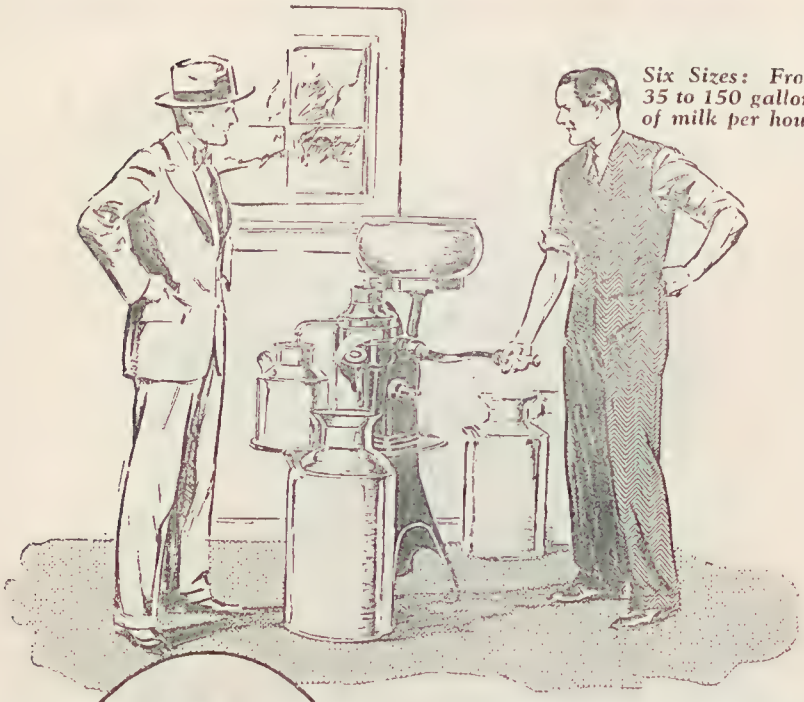

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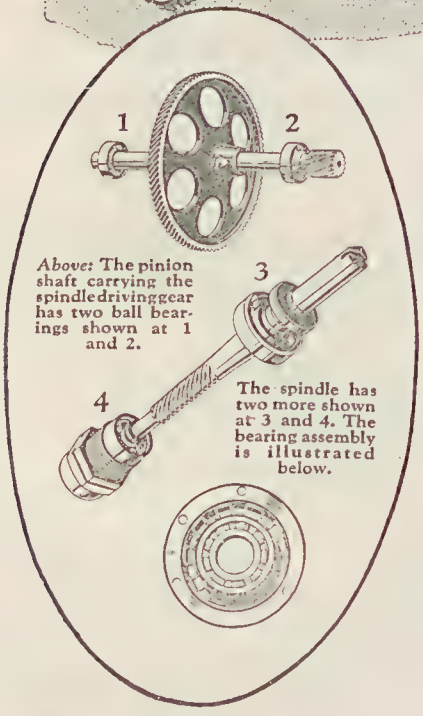

Above: The pinion shaft carrying the spindle driving gear has two ball bearings shown at 1 and 2.

The spindle has two more shown at 3 and 4. The bearing assembly is illustrated below.

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McCORMICK-DEERING
Ball-Bearing Cream Separators

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NATIONAL MUSEUM OF VICTORIA

THE JOURNAL

OF THE

Department of Agriculture

OF

VICTORIA.

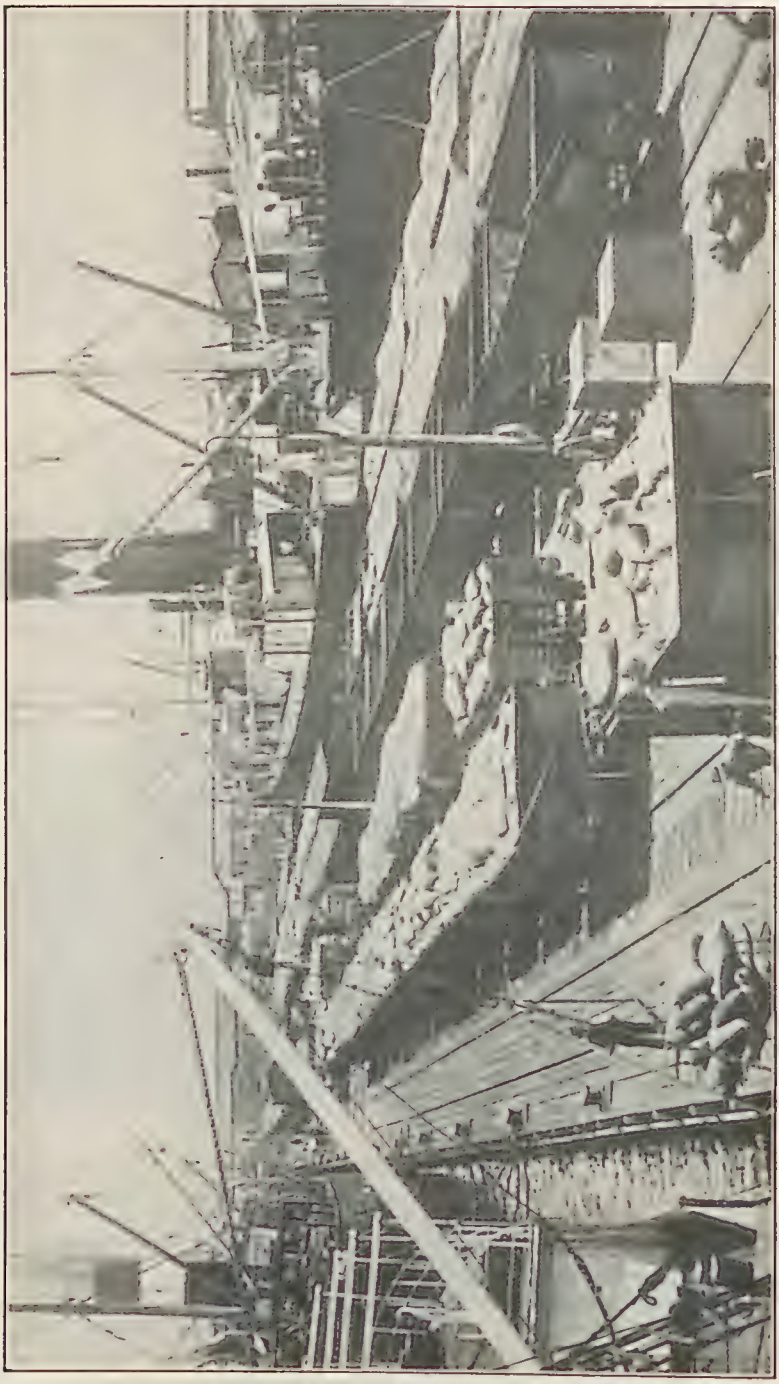
Vol. XXVIII. March, 1930. Part 3

Special Number issued to further the Appeal of the Hon. the Premier for

A Million More Acres of Wheat.

Grow More Wheat.

In these pages are set forth the nature of the national emergency and the reasons why farmers are called upon for more wheat. The Premier's appeal, with which we are privileged to open this issue, is supported by leading public men, including representative wheat-growers, and advice as to the methods that should be adopted to secure maximum yields on the acreage sown is given by Departmental experts.



Increased Exports are Essential for Australia's Prosperity.

VICTORIA.

Premier's Office,

Melbourne.

TO THE CITIZENS OF VICTORIA.

The Government and the people of this State, indeed of all Australia, are face to face with an economic situation which demands immediate rectification. Failing this there is no person in this community, whether he be rich or poor, countryman or city dweller, who can escape a material reduction in personal prosperity. The position can be remedied only by an immediate and substantial increase in exports and by a drastic curtailment of imports.

Wheat is the most quickly-won new wealth of all the forms of primary produce we raise. At least one million acres more than last year must be sown and every acre must be coaxed to yield its best. Never was there an agricultural community so well equipped in men and machinery, in land and in knowledge, to increase the yield by the amount required. And unthinkable it is that we should not meet this emergency through failure to put forth our full strength.

If the response falls short of the requirement it can only be because the people do not understand the real need for the effort, not that they are incapable of making it. Never let it be said that in the hour of need struggles for sectional advantages dimmed our vision and sapped our strength.

Lest there be some who may regard the wheat-growers as alone called upon, may I say that wool-growers, graziers, hay-growers and others with suitable land and serviceable plant are especially requested to grow wheat. Their help is vital to the success of the scheme.

Finally, I earnestly appeal for the wholehearted co-operation of all public-spirited citizens in this national effort to meet a difficult situation in a practical commonsense Australian way.

E. J. Hogan

Premier of Victoria

A MESSAGE TO WHEAT-GROWERS

From the committee directing the Campaign for an increased wheat acreage. This committee consists of Sir Frank Clarke, President of the Legislative Council, chairman, and three representative wheat-growers: Messrs. W. H. Kendell, Rupanyup; G. S. Street, Lismore; and A. L. Bussau, Hopetoun.

FACED with an emergency, most men are prepared to accept the idea that they must do their best—they chiefly want a definite lead and a rallying point from the men they trust as their leaders.

To-day such an emergency has arisen and this committee has been appointed to endeavour to draw together the many sectional efforts to promote exports in order to alleviate the present serious financial position. It is with that object in view that the campaign for an increased acreage under wheat has been inaugurated, and it is for the purpose of commending that objective to the farmers of Victoria that this appeal is published.

We know of the occasional objections to planting more wheat; some of them are sound so far as they go, but none of them controverts this one central truth:—

IF AUSTRALIA DOES NOT PRODUCE MORE AND BUY LESS, NOTHING CAN HELP HER.

Kipling said years ago to the English about foes threatening them: "Will ye pray them, or preach them, or print them, or ballot them back from your shores?" And so, at this time, all the lamentations, all the theories and all the speeches in the world will not alter that central truth, nor will anyone help us but ourselves.

Is there a sane man in any walk of life who believes that he is privately independent of the community to such an extent that what creates poverty in all other classes will not affect him? Does any primary producer believe for an instant that the value of his land, the ease with which he can finance his affairs, the freight he pays, are not dependent upon general prosperity? Does any primary producer credit that in some vague way he personally will be better off by using only a portion of his land, or that any other benefit will come of it?

He believes the situation is not of his making, but the more it is the fault of foolish or selfish sections of the community the more it is the duty of the sounder sections to

save the country from past folly. It is in that way that power and influence are gained.

The committee earnestly desires to co-operate with the natural leaders of each district and, out of that co-operation, hopes to achieve a practical result which will profit both the farmers and the country.

Frank H. Clarke.
Geoffrey A. Street
W. H. Kendall
A. Louis Drosan

On the Way to the World's Market.

"THE NEED IS GREAT."

The Minister for Agriculture, the Hon. W. Slater, M.L.A., commends to the farmers of Victoria the need for extra effort.

IN commending to the farmers of Victoria the appeal of the Hon. the Premier for an increased acreage under wheat this year, I do so with confidence that the objective will be attained. That confidence, which came first from my knowledge of the good sense of the farming community, has been strengthened by reports that have reached me from all parts of the State. I am assured that many farmers already realize the seriousness of the financial position. I feel certain that when this publication, with its clear exposition of the situation and its call for action, reaches the community, there will be few indeed who will not be convinced of the need for putting forth the extra effort required.

That the need is great cannot be questioned. The facts and figures printed in the following pages leave one no room for doubt. The serious position that has developed can be righted only by determined action on the part of every citizen. The wheatgrowers of Victoria, because of their unique position as producers of an exportable commodity that can be raised in a comparatively short space of time, are asked to give a lead to their fellows and to do everything in their power to make the coming season's harvest the best in the history of the State.

W. Slater.

25.3.30. *Minister for Agriculture.*

"EMBRACE THE OPPORTUNITY."

The Director of Agriculture, Dr. S. S. CAMERON, urges farmers to take advantage of the opportunities offering for a profitable year.

WHEN the Empire and its Allies were struggling in the throes of a War which threatened to engulf Civilization, this State of Victoria gave a magnificent response to the clarion call of England for the help of the Dominions to feed the people while the fighting men of the Nation were battling through the vital struggle.

In 1916, 3,680,000 acres of Victorian wheat lands produced the record crop of 58½ million bushels. This wonderful crop was 23¾ million bushels greater than the previous record crop grown on 2,398,000 acres. But it was not the additional area alone which produced the record. An equally important factor was the wonderful recuperative power of our wheat soils which is invariably manifested following on a dry year.

Now, a parallel position has come about. The call has come again for increased production from our lands. Not for the Empire this time, but for our own dire financial needs—to save Australian hearths and homes from penury. We are reliably told that the urgency for effort is as great as during the darkest of the war periods. And the opportunity to take advantage of the drought-accumulated fertility of the soils is also with us, for the season has already opened with encouraging prospects. I do not hesitate to say that, throughout a quarter-century experience of administration of agricultural work, I cannot recall any occasion on which opportunities have appeared better for a mortgage-lifting increase in our major primary products.

Think of the improved facilities and the advance in methods and practices since that record wheat crop of fifteen years ago. The necessity for thorough cultivation, the value of summer fallowing and the profit in heavier fertilizer dressings were not generally recognized by the wheatgrowers of that time. The many new varieties of wheat that have been since bred and developed for district suitability and increased prolificacy were not then available.

The grazier, whether woolgrower, lamb raiser, bullock fattener or dairy farmer, had at that time no inkling of the immense development of our pasture lands through phosphatic top-dressing and the consequent State-wide spread of valuable clovers over previously clover-deficient districts. Herd testing had not at that time taught to dairy farmers its wonderful lessons whereby the milk and butterfat production may be increased by the growing of fodder crops, and by rational feeding concentrated on the good cows in the herd.

At so crucial a time as the present, therefore, when the farmer himself wants quick money, and the State needs a quick materialization of new wealth from the soil, it should appeal to :—

***WHEAT-GROWERS** to increase the acreage sown, to give the crop the* **best chance possible** *by proper preparation of seed bed, and to sow the locally proven prolific varieties;*

***GRASSLAND FARMERS** in all districts where a profitable result from topdressing has been proven to* **double the area** *treated;*

***DAIRY FARMERS** to promote production to the* **full limit** *of the cows'* **yield** *capacity and to materially extend the milking period, and to*

***FAT LAMB RAISERS** to provide ahead for "topping off" a greater proportion of the coming season's drop. Possibly on account of the wool price position store weaners will be at a discount locally, but there is* **no present indication of a slump in export lamb prices.**

Finally, I offer to the farmers of the State the suggestion that no more welcome gesture of their appreciation of the efforts of successive Governments to promote their interests by stimulating improvements in agricultural practice could be given than a hearty response now to the appeal by the Hon. the Premier for an extra million acres of wheat, and an all-round increase in primary products for export.

Sowing A Million Acres More Wheat

By

H. A. MULLETT, B.Ag.Sc.,

Agricultural Superintendent.

In matters of trade the primitive races are a very practical people. With them barter is the rule. Both parties "down weapons" simultaneously and for, say, a bushel of wheat, one gets the equivalent in meat or some other commodity. If wheat is not forthcoming neither is the meat. A promise to pay does not appeal to the savage. He is afraid that, perhaps, his customer may be speared on his way home, or that he and his friends, once out of reach, may eat the meat and the wheat as well.

Such methods of trading are slow and cumbersome, but are obviously essential where the conditions of life are such that there is no solid foundation upon which to build mutual trust, without which there can be no credit.

A few primitive races and all civilized people facilitate trade by means of standard currencies under which so many cowrie shells or sovereigns, as the case may be, for the time being are equal to, say, a cow. Such a system implies, of course, that conditions exist under which the currency is readily convertible into goods and vice versa. Between the people of any one country with stable government, difficulties of conversion of currency into goods are rarely presented, but when nations trade it is frequently otherwise. They reckon debts in terms of standard currency, and if these cannot be adjusted with gold they are still barbarically practical enough to insist on payment in goods. They are all alike in their refusal to accept bank notes of other countries in payment of debt. Bank notes are promises to pay on demand; that is to say, are convertible to gold at face value on presentation at the bank of the originating country. But the answer of other nations, when asked to accept bank notes for debt, is—"Present them yourself, get the gold and send it along," and to that suggestion there is no logical retort.

A position has recently arisen out of the trade between Europe and this country under which adjustments are desired by the former country in respect of certain multifarious commercial transactions with us. It is necessary that the ledger shall be balanced immediately, and to do that it is important that shipments of gold shall be supplemented by

readily saleable goods; indeed, much more goods than we have been in the habit of sending abroad during the past few years.

That, in brief, is the reason why an appeal has been made for the planting of a million acres more wheat this year. With almost all forms of rural industry sudden increases in production are impracticable, and with most any substantial improvement may take years to effect, especially where the multiplication and maturity of live-stock are required. But in wheat we have an industry which, in many districts in this country, is capable of comparatively rapid expansion, inasmuch as the crop is ready some six or seven months after planting. In other districts where the crop may not be profitably grown except where preceded by a bare fallow of twelve months' duration, seventeen or eighteen months is the shortest possible time in which it may be raised.

Wheat, then, is the crop to which we must bend our energies in the present emergency, especially in the direction of growing it in those districts where it may be grown most quickly and with safety.

The first point I wish to make, therefore, is that the appeal to increase the Victorian wheat acreage by a million acres is an emergency measure. It is by no means a suddenly conceived idea to add permanently a million acres to the wheat belt. And being an emergency measure it means that unusual and special steps are required to achieve the objective; but that is not to say there is any need to adopt wheat-growing methods that are unsound. Indeed nothing is so likely to defeat the objective, for if it is vital that a million acres extra shall be sown it is equally important that each of those acres and every acre of the normal area give the maximum yield of which the land is capable; not only that, but that such yield be as profitable as possible to the individual grower.

In other circumstances the appeal of the Honorable the Premier might have been specifically addressed to growers of any other of our staple crops, but no other primary industry can be conceived as so well equipped in men, land, machines, and in knowledge to give the required response. Given a normal season, there is no other industry so competent to increase the scope of its activities suddenly by 28 per cent., for that is what the appeal means.

But if success is to be achieved it will be necessary to mobilize all the resources and to rally to the ranks all those who formerly grew wheat and who have forsaken that crop for wool—not only those, but also any with suitable soils whose plant, though used for hay and oats, is adapted for wheat.

If this can be done, the wheat will be grown in districts where it is likely to be a success, and by people who have had experience in growing it. There need be no suggestion of meeting the appeal by growing wheat in districts known to be climatically unsuitable.

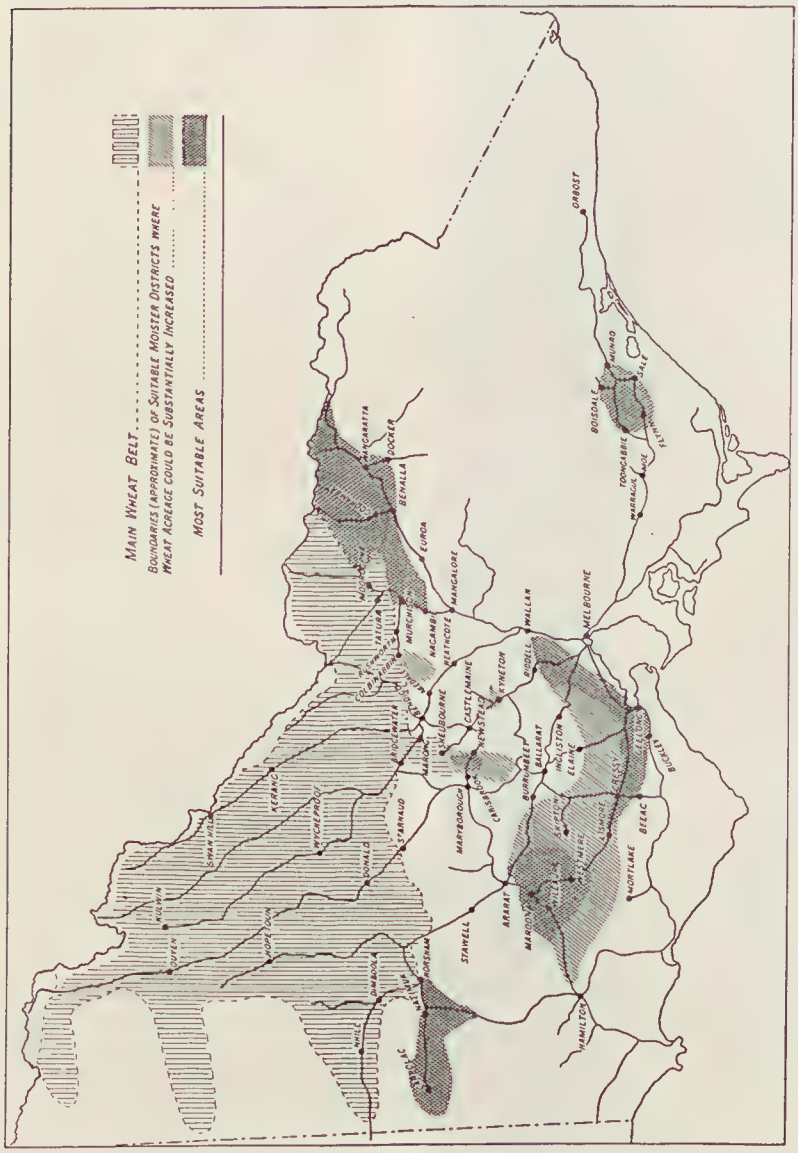
The wheat belt proper takes in all the land embraced between the 20-inch and 12-inch lines of average annual rainfall. Here it is the principal cash crop, with oats occupying a minor position. That a well-prepared fallow precede the sowing of wheat in this area is fundamental to success. Wheat can be grown successfully also on suitable soils between the 20-inch and 25-inch lines of average annual rainfall, but more commonly oaten hay or oats for grain is the principal cash crop.

Rushing in the Crop.

But on all the well-drained situations in this area wheat is interchangeable with oats. In this belt, sowing on fallow land, though frequently beneficial to the succeeding crop, is not essential for success. In a few of the still moister districts wheat can be grown on well-drained soils, but generally only in special situations, and with a soft, starchy grain. In wet years it is subject to rust. Any substantial increase in acreage here obviously is undesirable.

Fallowing being essential for a safe crop in the wheat belt proper, wheat-growers there are not advised to extend the acreage save in the cases where the crop promised so indifferently last year that it was eaten off, or where, when it was allowed to mature, the yield was of no consequence. Past experience has shown such land to be profitable to plant and cheap to seed. It is in effect fallow, inasmuch as, owing to the enforced rest, it is likely to be in a highly fertile state. Upon such land the normal manurial application may be reduced by one-third, unless badly windswept, because the original dressing of manure remains in the land only partly exhausted. It is believed that about a million acres of wheat in this belt either completely failed, or was a commercial failure last year. If 60 per cent. of this can be re-sown it will mean 600,000 acres of that required will have been secured, provided the area normal for this year is also sown. But, although many farmers within this area are already proposing to increase their seedings by as much as 100 per cent., in view of restricted finance, perhaps it would be safer to reckon on a 50 per cent. re-sowing; that is to say, 500,000 acres.

Within the wheat belt proper there are approximately 17,000 wheat-growers, so that an increase of 500,000 acres between them would average approximately 30 acres per head. If it is further assumed that half of these 17,000 experienced failure, or very light yields on at



least portion of their crops last year, it means that their average sowings will need increasing by an average of 60 acres per grower—a proposition well within the capacity of most farm plants to work up, seed, and harvest.

The balance required, 500,000 acres, can certainly be found in the 20 to 25 inch rainfall belt, in the nearer hay districts, out on the western plains, in the eastern Goulburn Valley, and in the North-eastern district. Here, apart from such land already prepared for oats that can be spared, it will be necessary to plough considerable areas of new land.

This is the slowest operation associated with wheat-growing; and much depends on the advent of timely autumn rains. Fortunately, in some of these districts the recent rains will permit of a start being made, but continuance of operations will depend upon more following. In these moister districts it is important that the wheat should be sown before mid-June, except on friable black soils and extra well-drained situations. Consequently the seeding season is much more restricted than it is in the wheat belt proper. It is of the greatest moment, therefore, that all should concentrate their plant and teams on the sites ready to take advantage of every fine day upon which ploughing, cultivation,

Straight Work.

and seeding are practicable. The condition of the power plant, whether it be horses or tractor, the working of the maximum hours practicable, and the planning ahead to avoid stoppages are factors which will control the acreage prepared and sown.

The speed and endurance of horses are largely conditioned by the extent to which they get hard feed from now on, and the ease with which the collars are fitted to obviate sore shoulders. Likewise the capacity of the tractor depends on attention to the condition of its working parts before it enters upon its work, and the regularity with which its needs are attended to while at work. Attention to straight driving of cultivation implements will also add a few extra acres to each team's work daily, and perhaps 20 acres at the end of the season.

As to methods, it is indeed fortunate that both the State Experiment Farms at Werribee and Rutherglen are situated in the moister portions of the wheat belt. The results of the experiments, continued in many cases for seventeen years, are, therefore, directly applicable. They show that the ploughing should be thorough and 5 inches deep, that the cultivation should be such as to promote a well-consolidated seed-bed. On

cementy soils, the surface soil should not be worked down too finely, otherwise it tends to cake, especially on old cultivated paddocks.

The experiments show also that seeding should be at the rate of 75 to 80 lb. of seed per acre, and that, if practicable to obtain, it will pay to use up to 1½ cwt. of superphosphate on each acre sown. The following varieties have been demonstrated to give the best results, and should be used in preference to others if available:—

New Mallee.—Yandilla King, Currawa, Rance, Rajah, Sepoy, Free Gallipoli.

Older Mallee.—Free Gallipoli, Rance, Rajah, Sepoy, Currawa, Federation.

Wimmera.—Federation, Free Gallipoli, Nizam.

Goulburn Valley.—Free Gallipoli, Major, Federation, Sepoy, Rance.

North-East.—Free Gallipoli, Major, Turvey, Federation.

North Central.—Free Gallipoli, Federation, Rance, Major.

Central.—Mogul, Free Gallipoli, Ghurka, Major.

Western Plains.—Ghurka, Free Gallipoli, Federation, Sepoy, Major.

All seed should be thoroughly pickled, preferably with dry copper powder at the rate of 1½ to 2 oz. per bushel, or, if the wet method is preferred, with either formalin at the rate of 1 lb. to 45 gallons of water, or bluestone 1¼ lb. to every 10 gallons of water. In both cases the time of immersion should be three minutes.

It is impossible in this short article to deal adequately with the whole of the methods that should be adopted to ensure a bumper yield, but in the following pages will be found information on the more important aspects of this question.

In conclusion, I would like to say that I wish the wheat-growers a prosperous season as a fitting reward for their labours as their due after an unusually long spell of adverse conditions.

Federation appears to be still the most popular variety in the Nathalia district, but there are still many growers who have not yet tried Free Gallipoli. In the Nurmurkah district this variety has almost completely replaced Federation. The average yields of a three years' trial, at the Waaia experimental plots are as follow:—

Free Gallipoli 19.3 bushels per acre.

Federation 16.7 bushels per acre.

Free Gallipoli does not stool quite so thickly as Federation; therefore, at least 75 lb. of dry pickled seed per acre should be used.

"A CALL TO DUTY."

Australia's great war leader, General Sir JOHN MONASH, G.C.M.G., K.C.B., V.D., Chairman of State Electricity Commission, joins in the Appeal.

IN times of national emergency, a plain call to duty never yet went unheeded in Australia.

To-day, Australia is faced with a financial crisis. It has been buying abroad more than it has been selling abroad, and has to encroach upon its capital—its gold reserves—to adjust the adverse trading balance. If it continues so to drift, the result will be "confusion worse confounded," and the people's plain duty is to produce more and import less.

The appeal in the first connexion is to the man on the land, and I have not the slightest fear of the response. No section of the community gave more freely of its manhood during the war than our primary producers and, despite this serious drain upon its numbers, production was maintained at the highest level—more so, in fact. Foodstuffs were just as important as munitions of war, and how patriotic was the response is shown by the fact that a diminished number of farmers put in a record acreage and secured a record crop, so that the captions, "Food for the Empire," "Farmers Win the War," were not so much slogans as absolute facts. The same spirit is required to-day, and I heartily associate myself with the appeal of the Hon. the Premier for the greatest possible acreage under wheat and the most intense effort to make every acre yield its maximum.

To old comrades now on the land I make a special and confident appeal. I know their difficulties, and how impossible it is for many to increase their acreage. But I do know that they will do their best by intense effort and cultivation to make every acre they are able to sow give its heaviest yield.

J. Monash

18.3.30

"YOUR RESPONSIBILITY."

The Chairman of the Commonwealth Bank, Sir ROBERT GIBSON, points to the effort of the individual as the all-important factor in National prosperity.

Australasian photograph.]

INDIVIDUAL effort in the aggregate becomes National effort. The economic position of Australia to-day requires that immediate National effort be exercised to meet the situation. The alternative can only be described as a policy of apathy which will eventually lead to serious National financial disaster.

The time has arrived when each individual citizen of Australia must therefore take stock of his or her personal responsibility to the Nation as a contributing factor to National progress and prosperity.

The individual only can decide this question. Those holding positions of public responsibility cannot do so, they can only call attention to the need and endeavour to stimulate the sense of National responsibility. The position I at present hold in the financial life of the country is therefore my justification for addressing my fellow-citizens.

After all, the solutions of our problem are simple in their essence so far as the individual is concerned, although complicated when viewed from the National stand-point.

If every responsible citizen will put forth effort to produce a little more of those things which constitute National wealth, and spend a little less upon things which are unnecessary for our well-being, and which have to be imported from overseas, our National economic problems will soon solve themselves. It really is as simple as this. The question is, what are you going to do about it? The responsibility is yours.

Robert Gibson

Melbourne,
19th March, 1930.

Why More Wheat is Wanted.

The Financial Situation Explained.

For the first time in many years Australia is feeling the pinch of actual need. Most of our people have been fortunate enough not to feel the tightness of that pinch up to the present, though many, through unemployment and other causes, have already suffered severely.

But it is on the other side of the world that we are finding our worst troubles. Australia has borrowed huge sums of money in London for war purposes and for development, and must pay the interest where the money was borrowed. Australia imports large quantities of goods from abroad which must be paid for. Many of the imports could be done without, but we must have raw materials for our industries, bags for wheat, fertilizers, machinery, chemicals, and a host of goods which we cannot or do not provide for ourselves.

We must maintain trade at as high a point as we can, and provide all the employment we can, and do our best, all of us, to carry through the present bad times without disaster.

The Causes of the Trouble.

Now what are the causes of all this trouble; how does it affect farmers; what should they do to help themselves and Australia? A short reply to these questions is set out in the following statements:—

(1) The Stock Exchange boom and collapse in New York last year disturbed finance and trade all over the world. The boom attracted money from all countries to New York, and very heavy losses were made when the collapse took place.

(2) The New York disturbance affected the ability or willingness of English investors to lend to Australia. In past years London has been willing and able to help Australia when bad seasons or low prices made it difficult for us to pay our interest or buy the goods we needed. Now she seems to have no money available for lending to us.

(3) Last season's wool clip realized something like £70,000,000. This season's clip is not expected to bring in more than £45,000,000. It may be less, and sales are slower than usual. The wheat yield was not a good one and prices are low; also the late harvest has delayed exports of wheat and flour. Butter, and the metals we export, are down in price.

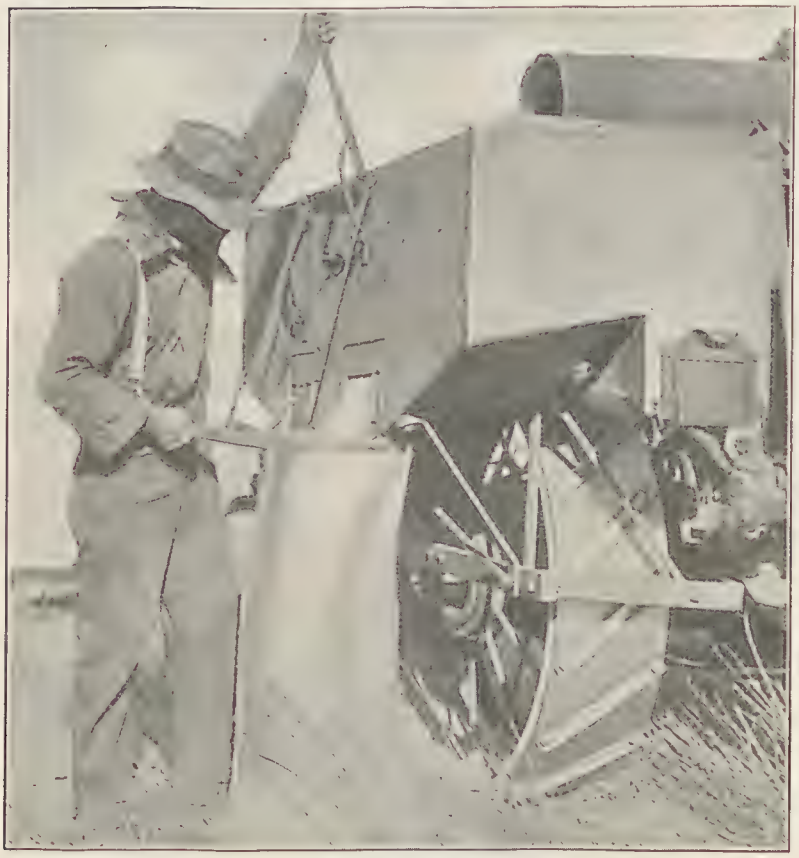
(4) While the value of our exports has been forced down, imports have actually increased, partly because traders expected Customs duties to be increased, and partly because they did not expect our exports to fall in value as they have done.

This little table shows the position—

	For Seven Months—July to January. 1928-29. £	1929-30. £
Imports	86,227,735	87,057,923
Exports	80,363,073	55,723,839

The above figures do not include shipments of gold and silver. Their value is shown below, as they indicate one of the actions taken to improve our position in London—

	For Seven Months—July to January. 1928-29. £	1929-30. £
Imports	217,427	166,992
Exports	2,043,851	10,245,180



Filling the Bag.

The reader will see that we have bought £20,000,000 worth of goods abroad in excess of the value of those sold to other countries. In addition, we have to pay about £27,500,000 each year for interest on money borrowed abroad by the State and Commonwealth Governments. There are other payments to be met, including the large amount spent by Australians travelling and holiday-making in Europe and other countries oversea.

This should be enough to make it clear to any reader that we badly need money in London. He will probably want to know how we have carried along up to the present. He might say, "Well! Australia is a lucky country. She must have a fairy god-mother over there in London." No, she has no helpful fairy, but she has sound and powerful banks.

What the Banks have done.

The banks of Australia foresaw trouble of the kind mentioned, but they did not expect it to be either so severe or to make its appearance from so many points all at the one time. Still, they prepared for contingencies. They accumulated gold here, out of which £17,000,000 has been exported during the past eight months, assisting Australia to pay for her purchases and meet her interest bill abroad. The banks also accumulated funds in London and other centres oversea. Out of this they have provided large amounts, totalling over £20,000,000, for the

At the Rail-head.

use of merchants and the Commonwealth and State Governments. In these two ways they have provided money on the other side of the world to help meet our obligations there.

Now this kind of thing cannot continue indefinitely. Australian banks still have large assets on the other side of the globe, but they must keep some reserves. They still have portion of the gold which they accumulated in better times, notwithstanding large amounts already exported, and they should retain a fair portion of it for emergency purposes.

How Can We Improve the Position?

How then are we to pay the interest on the money Australia has borrowed abroad? How are we to pay for wheat and flour bags, wool packs, kerosene, fertilizers, and many other necessary goods which are not produced here? We must reduce imports to bare necessities and increase exports of saleable goods. As the London money market

improves we may be able to float some loans to tide us over the coming half year, but this course cannot be relied upon, and its effects would not be lasting.

What should be done? We must re-establish our credit by exporting more of those things we can purchase and which other nations require. Foodstuffs are the things most certain to find buyers, and wheat is one of the few crops which can be largely increased within a fairly short period of time.

The price of wheat rises and falls mainly in keeping with supply and demand. To-day's world prices are below the general average cost of production. In consequence the total area sown in all countries for wheat this year may show a decrease. The present low prices should increase consumption. Thus demands may be larger and supplies smaller. Then prices would tend to move upward. If Australia gathered in a bumper harvest a substantial profit might result.

To sum up—Farmers should sow every acre which can be efficiently prepared and properly cared for. If Australia fails to put forth the effort necessary to improve its financial position overseas the position may become very serious. Local trade and commerce would languish, values of farm lands and stock might be heavily depressed, and it may be a long time before values regain the levels of the past few years.

Land values in the past have rested upon production. High production is necessary to maintain those values now and in the future.

If the question is raised—"Why should the farmer be selected to make this special effort?" we would reply, "Because he only can make a strong movement in a short enough time to be fully effective." He is fortunate in being able to make that rapid and useful adjustment of production which will be of marked assistance to the country generally and, incidentally, of profit to himself. Other industries will find it necessary to make adjustments in keeping with conditions, but such changes cannot be effected in a relatively short period of time, and, in general, even when they are made, they will not have the effect required on the other side of the world, where it is most urgently needed.

The wheat crops in the Numurkah district are comparatively free from serious weeds. In some wet years, Cape weed may choke out a portion of the crop, but the only really persistent weed is the wild oat. In some paddocks it is thick, whilst in other paddocks on the same farm it may be partially absent. Although wild oats provide a certain amount of sheep feed, they must still be regarded as doing more harm than good.

Usually, wild oats are commonest in the early-sown paddocks, for the reason that the late-sown areas generally receive an additional cultivation, and this kills many weeds that germinate after the first portion has been sown.

It is, however, very important to remember that very late sowing on the heavy loams of the Goulburn Valley is undesirable, and every endeavour should be made to complete all sowing operations by the first week in June.

"MAKE THE GRADE."

Victoria's Chief Railways Commissioner, Mr. Harold W. Clapp, looks forward to a bumper harvest.

NOT since those drear days of the War period has Australia been faced with a problem such as that which now threatens our national standing, and calls for concerted action on the part of her citizens.

It is my firm personal belief, and that of the team of 25,000 railwaymen for whom I speak, that the same indomitable spirit and will to win through which characterized the Empire's efforts and established Australia as a Nation a little more than a decade since, will again prevail.

The present economic situation imperils our national prosperity, and the fact that immediate action on the part of all Australians is essential cannot be too strongly stressed. The necessity for adjusting our trade balance is urgent and the appeal for wheat and still more wheat—the primary product which shows a quick return, nationally as well as individually to the grower—must have the whole-hearted support of every member of the community. Certainly it has the unqualified support of all railwaymen.

The wheatgrower can definitely count on the active co-operation of the Railways Department to assist in every possible way to help "make the grade." Just as a bumper harvest is essential to assist in stabilizing our finances, so is the resultant revenue accruing to each State from the transporting of that harvest, by the only possible means—your Railways—also essential.

Moving to the seaboard one of Victoria's big wheat yields—47 million bushels in 1927, called for all that team work implies, on the part of her railwaymen. State revenue expanded to the extent of £771,000 from our handling of that job. In the lean seasons such as 1928, with only 26 million bushels but with the same equipment—locomotives, trucks, and the team ready for service—our contribution to the State's coffers slumped to £338,000.

This Department and the wheatgrower must therefore go hand in hand, and railwaymen are ready and willing to co-ordinate their efforts and look forward with confidence to a still greater test of their ability to transport efficiently the coming Season's product.

Harold W. Clapp

Chairman,
Victorian Railways Commissioners.

21.3.30.

Rushing in the Wheat Crop

Practical Reminders

By

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THE great majority of Victorian wheat-growers are likely to sow an increased area of wheat in 1930. Undoubtedly, all will endeavour to put the crop in rapidly under the best conditions, so that maximum yields may be obtained.

To some extent, the duration of the sowing period is governed by seasonal conditions. On the other hand, the energy, management, and skill of the grower play a large part in the successful completion of seeding operations. Almost invariably the last-sown crops are the poorest, and the sowing season is normally so restricted that it should be the object of every grower to rush the crop in once sowing conditions are suitable.

Few wheat-growers can look back on a seeding period which was not protracted in some way by delays which could have been avoided. Accidents may happen, despite all precautions taken, but, by efficient preparations, and a knowledge of what to do in emergencies, the experienced farmer will reduce delays to a minimum.

Already the season has opened favorably, and soon sowing will be general in the Mallee. No time, therefore, should be lost in making final preparations, as a few hours gained now may be valuable later.

The following notes will serve as reminders to experienced farmers, and possibly may be of some assistance to those who have but recently commenced to grow wheat:—

Efficient Seeding.

The main factors which control efficient sowing are the following:—

1. The preparation and ready availability of seed and manure.
2. The strength and reliability of the power available either as horses or tractors.
3. The efficiency and reliability of the implements.

4. The general management, workmanship, and energy of the grower.
5. The soil conditions as determined by seasonal rains and previous cultivations.

Seed and Manure.

Nothing is more important in saving time than keeping the seed and manure up to the drill. Wherever possible, the maximum quantity of seed likely to be sown should be prepared early in the autumn. Light grading is advisable, but, if there is a shortage of seed, it should be thoroughly cleaned with the winnower. Any straws left in the seed may cause blocking of the cups of the drill, the result being misses in the crop and loss of valuable time while the obstruction is removed. Blockages of either seed or manure will be detected if the seed and manure boxes are inspected frequently. Dry pickling should be done in con-

Spring-toothing Stubbles for Wheat.

junction with the cleaning or grading, care being taken not to use too much powder, any excess of which, apart from being wasted, may also cause blockages.

It is advisable to put a definite quantity of cleaned seed in each bag, so that a check can be kept on the amount sown. Butts containing two bushels each are convenient to handle. As the weight of seed sown per acre by the drill depends on the size and shape of the seed, the manner of pickling and the atmosphere conditions, it is necessary to test periodically the rate of sowing. This is particularly important if the seed-wheat available is limited. There may be a difference of 15 lb. per acre in the amount of wheat delivered of two varieties sown on the same gear.

This is true also of superphosphate, some bags of which run more freely than others. The manure also should be carted early in the season, and placed in an easily-accessible spot under cover. It is most important that the manure should be kept dry, both when in the bag and after it is put into the box. Much time is lost when lumpy manure

has to be crushed up before it will run. Broken pinions or cogs often result from the extra strain caused by damp or set manure. To avoid breakages, in the morning, it is advisable to free the cups and stars by turning their driving rods with the handle provided, or by jacking up the drill and turning the wheel.

Similar precautions should be taken after the drill with manure or seed in the box has been bumped along a headland or road. Occasionally allow the boxes to become almost empty so that any accumulated manure lumps, straws, or dry pickle may be removed.

Horses and Tractors.

Although the farmer may be prepared to work untiringly for long hours, the number of acres sown per day depends largely on the strength and reliability of his teams. The team work must be adjusted to secure a maximum amount of service for the number of animals kept.

Before sowing commences, all available horses should be mustered and well fed. Young horses two and a-half years old may be broken in, and will at least act as reserves. Even the hacks can do their part.

Horses will work longer and better if clipped. A clipping machine is a good investment on the farm, for the work may be done in wet weather. If full clipping is not desired, it may be done trace-high only, but care must be taken to clip also the shoulders and withers. The most common cause of horses "sitting back" or being out of action at a critical time is *sore shoulders,* to prevent which the following precautions should be taken:—

1. Make sure the collar fits correctly. Loose collars are more liable to cause trouble than are tight ones. When the collar gets too hard, have it restuffed.
2. Keep the collar clean; brush it in the morning when dry. Clipped shoulders assist in keeping collars in a clean state.
3. Quickly wash and dry the shoulders each evening, and groom them in the morning.
4. Keep the horse in good condition.
5. If abrasions occur, treat them immediately.

A good home-made lotion recommended by the Veterinary Staff of the Agricultural Department is made up by mixing ½ ounce each of zinc sulphate and acetate of lead with one quart of water. This lotion may be used also to harden the shoulders of young horses, or horses chronically liable to sore shoulders.

Colic sometimes causes the absence of a horse from the team. This may often be avoided by observing the three rules—

1. Feed the horses at regular hours.
2. Always water before feeding.
3. Use good feed only.

Chains are often allowed to rub the sides of the horse. If this cannot be prevented by placing leather pads under the hame hooks, cover the chafing section of the chain with old hose or strong cloth.

Other matters to attend to in connexion with horses are a general overhaul of the harness, an examination of the teeth, the trimming of the feet, the restocking of the medicine chest, and last, but not least,

the provision of sufficient feed and water to last through the sowing season. Time should not be wasted in the cutting of chaff or in carting water when sowing conditions are ideal.

The tractor is most useful when it is required to sow a large number of acres per day. It is used to full advantage only when kept going from daylight till dark, or even later. Like the horses, it needs care and attention, and before sowing is a good time for a general overhaul.

Implements.

In most cases, the extra acreage sown this year will be put in without any additions to the plant, which must be in good order for efficient work. The principal implements used at sowing time are the drill or combine, the harrows, the scarifier, the cultivator, the roller, and in the wetter districts, the plough. These are all comparatively

Speed the Plough.

simple types of machinery, and are easily overhauled. They should be carefully examined, particularly remembering the following:—

Combine or Drill.—See that the driving mechanism from the wheels to the stars and cups is in order. Replace any broken spokes, pinions, or cogs. Have the change cogs and drill tools ready for use. Clean the manure stars. Adjust the springs and tynes so that the sowing and cultivation will be uniform, and provide new points if necessary. Give the machine a short trial as early as possible.

Cultivators.—Fit new points or discs, if necessary, and provide sufficient to last through the season. A set of wide points will be required should weeds become troublesome.

Harrows.—Reset the tynes, and sharpen, if necessary.

Ploughs.—Repair coulters, and obtain a supply of shares. Extra swingle-bars, hooks, and eyebolts are handy in case of breakages or loss.

Duplicates of any parts likely to wear out should be obtained in advance, and the supply of lubricating oils and grease replenished.

General Management and Workmanship.

In the great majority of seasons, the success of the crop depends very largely on getting the seed sown at the right time on soil in good physical condition. If rains fall during seeding, and they will be welcomed for the sake of the crop, delays will occur. Once seeding has commenced, "Sow quickly while the weather holds" should be the slogan.

By good management, rather than by expenditure on additional plant, horses, or labour, the number of acres sown per day may be appreciably increased.

The order in which it is decided to cultivate and sow the various paddocks should receive careful consideration. There are varying factors of soil fertility and drainage which may influence the choice, but, other things being equal, it is advisable to sow the dirtiest paddock last, so that greater opportunity may be given to kill the weeds there before the wheat is sown.

It is essential to prevent the weeds from obtaining a hold. Immediately they start to germinate, the sheep should be run in the paddock, thus reducing the number of cultivations necessary, and preventing the weeds from becoming so big as to necessitate the use of a scarifier or plough. In parts of the Mallee, where sheep are not available, a stroke with a wide set of harrows at an early stage will kill many of the young seedlings.

There are several ways by which the man on the drill or combine can save time in the paddock.

Firstly, he can minimize overlapping by careful driving. This may be difficult on stumpy country, and it is better to overlap than to leave misses. Nevertheless, every year paddocks may be seen where unnecessary overlapping has taken place.

Secondly, he should aim to eliminate unnecessary spells and turns. The advisability of sowing "round and round" the paddock, as is common, or in "lands," will depend on the condition of the ground, but in the latter case the direction of sowing should be in the direction of greatest length, thus reducing the number of turns. The manure and seed should be ready at a convenient place on the headland or at the corner. If a lorry is available, it may be used for taking out the seed, manure, and fuel for the tractor.

Harrowing behind the combine is usually accomplished by means of the trailing harrows. These may also be attached to the drill, and are useful in saving an additional operation with the harrows if the seed needs covering. When harrowing, use a hack or harrow cart—it will mean more acres per day.

Should the rainfall be light in May, it will be necessary to continue sowing under dry conditions in parts of the Goulburn Valley and Mallee, where sowing should be finished by mid-June. Unless the seed can be placed in moist soil within 2½ inches of the surface, it is usually safer to sow it shallowly in the dry soil and await the rain to germinate it.

When sowing a paddock which is free from weeds, and where further cultivation is unnecessary, as when sowing dry, the drill is quicker than

the combine. When cultivation is needed, the combine enables the seed to be sown under very favorable conditions on a newly-tilled seed-bed with a minimum of subsequent interference from weeds.

Stubble Land for Wheat.

When stubble or lay land in the wetter wheat-growing areas is ploughed early in the autumn, it is usually cultivated before it is sown. If, however, ploughing does not take place until the remainder of the prepared land on the farm has been sown, the usual method is to plough, harrow, and drill, or to plough and put in the seed with the combine. In either case, it is inadvisable to let the ploughing get too far ahead of the drill. It frequently happens that rain falling after the final cultivation of the fallow or ploughing of stubble land necessitates an additional cultivation before the seed is sown at what is probably a much less opportune time. A harrow trailed behind the plough is useful in some cases.

When it is intended to plough and sow stubble land, much subsequent trouble will be saved if a good burn of the stubble is obtained. If this is not done, the straw is likely to block the following ploughs and drills unless disc implements are used.

Soil Conditions.

The condition of the fallow prior to sowing naturally has a big influence on the time that will have to be expended preparing that fallow for seeding.

The amount of rain falling in the months from March to July and its incidence are probably the biggest factors in accelerating or retarding the progress of sowing. Regular monthly rains of 1 or 2 inches make sowing conditions ideal.

When the rain holds off, the soil may become too dry for germination. On the other hand, heavy rains falling on poorly-drained clay soils may prolong the sowing period owing to the soil becoming waterlogged.

The possibility of such periods occurring emphasizes the need to put forth every effort to sow a maximum area when the soil conditions are favorable.

Eleven varieties were used in sowing the crops entered in the Ultima competition last year, and of these Ranee was the most popular, with Free Gallipoli next. In this connexion the results of the wheat variety trials at Swan Hill should be of interest. In 1929, the first year of the tests, the most successful wheats were Free Gallipoli and Sepoy Selection, both of which gave a definite increase in yield of 7 per cent. over the control variety Yandilla King. Rajah, Ranee, 4H, and Federation were all inferior to Yandilla King, Federation being so to the extent of 39 per cent. In the case of Penny, Nabawa, and Currawa, the results did not indicate any material differences from Yandilla King.

WHEAT VARIETIES

The following list has been compiled as a guide to growers who have not yet secured their supplies of seed wheat and are desirous of obtaining, where available, the varieties best suited to their district. The varieties printed in black type are those which have been proved most suitable on experimental plots conducted by the Department of Agriculture or by the experience of district growers.

NEWER MALLEE—

Yandilla King, Currawa, Ranee, Rajah, Sepoy, Free Gallipoli, Mac's White, Bald Early, Joffre, Penny, Early Gluyas, Waratah.

OLDER MALLEE—

Free Gallipoli, Ranee, Rajah, Sepoy, Currawa, Federation, Joffre, Penny, Nizam, Nabawa.

WIMMERA—

Federation, Free Gallipoli, Nizam, Wannon, Huff's Imperial, Rajah, Penny.

GOULBURN VALLEY—

Free Gallipoli, Major, Federation, Sepoy, Ranee, Nizam, Joffre, Yandilla King, Bald Early, Nabawa, Minister.

NORTH EAST—

Free Gallipoli, Major, Turvey, Federation, Joffre, Nizam, Waratah.

NORTH CENTRAL—

Free Gallipoli, Federation, Ranee, Major, Turvey, Ranee, Currawa, Penny, Nizam, Yandilla King.

CENTRAL—

Mogul, Free Gallipoli, Gkurka, Major, Currawa, Turvey, Federation, Yandilla King.

WESTERN PLAINS—

Ghurka, Free Gallipoli, Federation, Sepoy, Major, Nizam, Yandilla King, Turvey, Yanward.

Reducing Production Costs.

Efficiency on the Farm.

By H. A. Mullett, B.Ag.Sc., Agricultural Superintendent.

Australian wheat-growers are asked to grow more wheat for export—to grow it in still larger quantities than at present for competitive sale on the open markets of the world.

At once the question arises, can they do so at a profit? Are they being asked to grow wheat at a personal loss in order that the State may gain? The answer is definitely no. In the wheat belt proper, they are asked to increase their acreage without additions to the plant, and for the most part on land that failed last year—land that can be very cheaply seeded. Hence the average cost per bushel should be substantially lower than usual.

In the moister parts of the State no change over of whole farms to wheat has been suggested, but that land for the moment unprofitably used for wool or hay should, in part, be devoted to wheat, utilizing existing plant for the purpose. Wheat can be grown very cheaply in these circumstances, because the overhead costs, plant, and labour are shared with other sources of revenue on the same property.

In the past, Australia has been able to produce wheat more cheaply than any country in the world, and undoubtedly can do so again. But we should remember that within recent years costs have been steadily mounting, as indeed they have been in practically every other country. To some extent this is because the long period of satisfactory prices since the war has not created the sort of atmosphere in which wasteful methods have been eliminated, rather have they flourished.

The present slump in prices will undoubtedly lead to the elimination of waste in some of the more progressive of the exporting countries. Low-grade soils and areas where the risk of early frost and rust is greatest will go out of cultivation. Every effort will be made to reduce costs. And it is from this point of view that future competition may affect us most. Ours is the first crop to be seeded since the slump in price, and we have a unique opportunity to grow this crop at a lower cost than has any country that has produced the present surplus, or the crops about to be harvested in the northern hemisphere.

In what practicable ways can we do this They are:—

(1) Obtaining more work from the existing plant.
(2) More profitable use of labour when not actually cultivating, sowing, and harvesting wheat.
(3) Increasing the yield on each acre sown.

I.—Obtaining More Work from Existing Plant.

It is undoubted that some farmers can grow wheat at up to 50 per cent. less cost than do their neighbours. The most important reason, of

course, is that a higher average yield per acre is obtained for the same outlay. But another is the fact that the ratio of the acreage sown to the total outlay, i.e., the number of acres sown per unit of expenditure in plant and labour, interest, &c., are higher in the former cases than in the latter.

On many properties the acreage sown is definitely below that which can be handled by the plant, consequently the proportion of the costs which each bushel bears is too high. This prompts one to inquire whether the tendency of the wheat-grower to purchase plant of ever increasing capacity has not been overdone to some extent.

From a cost of production point of view, it certainly has been overdone, unless more acres are grown with the bigger plant, or, if not, unless profitable use has been made of the time saved. Granted that some elasticity about the plant is desirable to cope with rush periods due to weather conditions, the temptation to the farmer to buy the very

A Bumper Crop grown by Mr. J. Knox, Cosgrove.

latest machine because it is bigger than the one he owns at the moment should, in these times, be resisted if extra work in proportion to its cost cannot be found for it.

Not only are many plants not used for the maximum period they could be worked, but there is also considerable loss of efficiency arising from failure to get the best out of them while they are being worked. This is eventually translated into increased costs of production. Crooked driving of cultivation implements necessitates unduly large overlaps. This double treatment is waste, quite small in each round it is true, but very material in the aggregate. Straight driving will eliminate it, and add 20 to 30 acres per team to the area if the extra time gained is so utilized.

This is an example of the kind of saving that attention to a comparatively small detail can give. Many others immediately suggest themselves, for example, the cutting out of waste time due to stops at the ends of rounds, and the elimination of short rounds by careful choice of the direction in which long paddocks are worked. The culti-

vation of the most distant paddocks first, and the cultivation of strips of adjacent fields when travelling to and from work. These are points which shrewd farmers never miss, but many do. Attention has been drawn to others by Mr. W. B. Miller in his article, "Rushing in the crop."

II.—More Profitable Use of Time.

Another very important factor in reducing the cost of production of wheat is the choice of remunerative employment of the owner and any employees during the time they are not actually engaged in the operation of wheat-growing. In many of the cost of production figures that have been published recently, the whole of the time of the owner and the employees has been charged up against wheat, whereas in most cases quite profitable employment has been found with sheep, oats, cattle, pigs, poultry, road contracts, erection of permanent improvements, and the like. Such time obviously is not chargeable to wheat, unless the surplus of revenue over the expenditure is added to the returns from that crop.

While spare time is certainly not the lot of the struggling new settler—indeed the reverse is the case—it is undoubted that there are many individual opportunities for greater profit from sidelines than have been availed of for some years past. Under the stress of the future, undoubtedly these will receive greater attention, and so help to reduce the cost of wheat production. This is an avenue upon which too much emphasis cannot be laid. Nowadays one cannot expect a remunerative return from any primary or secondary industry in which full time is not worked.

III.—Increasing Acreage Yields.

Perhaps the greatest field for the reduction of cost of production of wheat in the near future lies in increasing the acreage yield of the crop. The classic illustration as to what can be thus achieved is the rise of the average wheat yield in the Wimmera, where a 200 per cent. increase has been secured in the past 25 years. Naturally, there are upper limits of yield beyond which it is increasingly difficult to pass, and in the vicinity of which a few farmers have already arrived. These men grow 45-bushel crops where their neighbours grow 30 bushels, and 25-bushel crops alongside 15-bushel ones. This is because the latest and most scientific methods of wheat-growing have been adopted. Further increases with them depend upon the rate at which fresh discoveries are made. But for the rest there are spectacular increases on present yields immediately to be obtained by the putting into practice of scientific methods their neighbours have found of value. The average yield for the State for the last five years was 13.17 bushels per acre. It could, with very little increased expenditure, be raised to an average of 18 bushels an acre, a yield higher than that secured in the best season we have ever had—a year in which nature stepped in and gave every one a hand. Every bushel an acre we can lift the State yield this year will add to the total, possibly 4,600,000 bushels. An average increase of 3 bushels an acre would give nearly as much wheat as is likely to be obtained from the extra million acres it is hoped to plant, and, of course, at infinitely less cost and trouble. The knowledge is available, all that remains is to put it into practice, a

task seemingly easy, but normally a lengthy process. Perhaps the present economic crisis will provide the necessary stimulus, and, if it does, it will go far towards making wheat growing more profitable than it is on many farms to-day.

The advocacy of the following principles for successful wheat growing is made with a full understanding that on a number of farms, owing to specially adverse circumstances, this year it may be impossible to put them into practice in their entirety, but also with the knowledge, that on most, they can be adopted.

In the wheat belt proper there are seven golden rules for success—fallow early; work the fallows well; sow on a firmly consolidated seed bed; seed at a sufficient rate on each acre wheat varieties proved by test to be suited to the district; liberally fertilize the crop; prevent diseases, especially smut, by scientific methods; keep some sheep. These principles are familiar enough and widely adopted, but it is in the technique of their application that there is room for so much improvement. That technique has been the subject of careful investigation, and some of it, with modifications appropriate to the present emergency, is described below.

Fallowing is a subject upon which there is much advice to be given; but, so far as the coming crop is concerned, the fallow preparation, which began nine or ten months ago, has been accomplished. The seasons have been so dry that there is little or no stored moisture being brought forward except that which fell in some districts since January, and which has been retained unusually well, where the fallows have been worked. The deficiency is a handicap to the new crop, but, provided normal rains occur between now and harvest, will be largely offset by the unusually large supplies of plant food accumulated in the soil because of its enforced rest. Seeding has commenced already on some farms in the more northerly portions of the Mallee, but it will be deferred until early May for average districts, and later for the main sowing in the Wimmera. Timely rains between now and seeding will permit of the fallows being worked down into good tilth. The earlier this can be done, the better the chance of sprouting and killing weeds before the crop is sown. Deep cultivation at this time of the year is undesirable. It should be thorough and regular, but shallow. On farms where the acreage it is proposed to sow is so large that the seeding must commence very early, there may be insufficient time to make sure that the first paddocks sown are quite free of weed seeds. In these cases it is advisable to commence first on the paddocks believed to be the cleanest, leaving those likely to be dirty until there has been time for a good kill of rubbish before they are sown.

These precautions are desirable because weeds may be more troublesome than usual this year, especially if the season is a good one. The reason for this is that, for several years, there have been relatively few opportunities for weeds to germinate, a condition precedent to killing them with the sheep and cultivator, hence they remain a potential competitor with the coming crop. Where weeds are likely, and where, owing to early sowing, there is no opportunity to eradicate them, the additional precaution of giving the land a heavier seeding, and applying a heavier dressing of fertilizer than usual, is desirable if practicable.

In some districts farmers will not be able to exercise their usual discrimination as to choice of wheat varieties, as seed has to be obtained

from sources outside their own control. But in the majority of cases it will be possible to sow the varieties desired. There are varieties which are much more suitable to some districts than others, and they should be obtained if possible. A full list of these is published on another page. The rate of seed to use depends upon the district, upon the soil, and upon the variety. In the drier districts relatively light quantities are sufficient. In the northern Mallee from 50 to 60 lb. an acre is ample—the higher quantity for large grained samples and any varieties known to be of poor stooling capacity. At a pinch, even lighter quantities will suffice, though generally at some reduction of yield. Still where seed is short, on new land, or where the risk of weed competition is negligible, it will pay to spread that available somewhat thinly over the full acreage rather than concentrate on fewer acres, provided that the reduction is not more than 10 to 15 lb. per acre below the normal rate of seeding. In most other districts of the wheat belt proper at least 75 lb. per acre should be applied, and in the moister areas up to 90 lb. per acre. Anywhere where thin, poorly stooled crops are the rule, it will pay to increase the usual rate of seeding somewhat. In general, the better the condition of the fallow the more plants it will support per square foot. Likewise the more weeds there are on the land, and the later the sowing, the heavier the seeding should be. The proper depth is about 1¼ inches, but for dry seeding half that depth is best. All seed should be carefully winnowed to separate chaff, straw, and other rubbish. The object of this is mainly to permit of free running through the drill, thus avoiding blocked hoes and irregular feeding of the seed conveying mechanism. Grading is not now regarded as essential as it formerly was, though if properly done is a guarantee that oats and other foreign seeds, save barley, are absolutely eliminated. Seed late maturing varieties first, and early maturing varieties last.

In the rush of seeding a bigger acreage, especially if sown on dry soil, pickling is apt to be abandoned or hurriedly done. This is a mistaken policy, and the risk of loss is more than any temporary gain of time is worth. It is true that where the seed is sown on a dry seed bed the risk of smut infection is minimized, but dry sowing is by no means an infallible preventative of smut. For dry seeding the safest pickle to use is one of the dry copper powders mechanically dusted on the grain at the rate of 2 oz. per bushel. This is also the best pickle to use for clay soils that tend to set, and for late sowing in soils that are apt to be cold and wet. The reason for this is that dry copper powders do not retard the germination. On the other hand, both formalin and bluestone do, and kill some grain as well. The slower the germination in cold wet soils, or soils that set with a cementy surface, the greater is the mortality of the plants, and the thinner the crop, hence the necessity to avoid any preventable means of retarding it further.

Under all conditions throughout the wheat belt, superphosphate has been proved conclusively to be the outstanding fertilizer for profitable results. The fertilizer costs on the average about £5 5s. a ton at the farm, and hence the amount to use needs to be determined with some degree of precision. That can be done only by accurately controlled experiments. The tests show that for greatest profit 1½ cwt. an

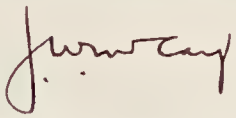
acre should be used in the western, the central, north central, and Wimmera districts. In red soils in the Goulburn Valley, in the north-east, and in the older Mallee, 1 cwt. is sufficient. On land which failed last year, two-thirds of the usual manurial dressing will suffice, so that in the newer Mallee instead of 90 lb. for fallow, 60 lb. is sufficient; on stubble land, 40 lb. is enough. On weedy land, or land where takeall is believed likely to appear, the manurial dressing should be increased beyond the amounts cited. The object of so doing is to assist the wheat plant to compete with these pests. Superphosphate should always be drilled at the same time as the seed. Recent tests have shown that the yield is reduced if the manure is sown at any other time. The reason is that the young plants require the phosphoric acid, and it should be in close proximity to the roots. Although the phosphoric acid in superphosphate is water soluble, it does not disperse far from the site at which each particle was dropped.

These are some of the directions on which important additions can be made to the acreage yield for the coming crop. As soon as that has been seeded, fallowing should be commenced for the next year's crop. The perfection with which this, and its subsequent cultural operations, can be carried out is of fundamental importance, but it will be time enough to talk of that when the rush of seeding is over.

Major-General Sir J. W. McCAY, K.C.M.G., K.B.E., C.B.,
Deputy Chairman, State Savings Bank, writes :—

FEW institutions are more immediately interested in wheat growing than the State Savings Bank of Victoria, which has advanced money to many farmers in the State. Consequently, it does not appear to be an intrusion on the part of the Acting Chairman of Commissioners, during the temporary absence abroad of the Chairman, Sir William McBeath, to say a few words in support of the Premier's appeal to primary producers to grow more wheat.

Wheat is the one exportable primary product whose yield can be increased in a single season. Temporary though the difficulties of Australia and Victoria may be, they exist. They can be overcome only by a substantial increase in our exports, as an aid in restoring the balance of trade. This increase means also increased returns to the individual grower, so that the course recommended produces both public benefit and private advantage. That being the case, I can support unreservedly this appeal to growers.



Pickling the Seed

Methods of Bunt Prevention

By

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The efforts that are being made to produce a record crop in Victoria this year will not be brought to full fruition unless wheat-growers take adequate steps to control the diseases which year after year levy a heavy toll on Victoria's harvest. It has been estimated that Take-all, Flag Smut, Loose Smut, and Bunt or Stinking Smut cost the wheat-growers and the State approximately £900,000 each year. For the first three diseases there is no specific remedy, and reliance must be placed on good farming practice to minimize the losses caused by them. In the case of Bunt or Stinking Smut, however, the wheat-grower can, by careful pickling, definitely eliminate this disease from his wheat fields.

At a time like the present, when every bushel of wheat is so urgently needed, it would be deplorable if, for want of a little care, losses should occur through bunt infection. The aim should be to produce a bunt-free harvest, and it is with the object of assisting farmers—particularly those with little experience in wheat-growing—to achieve this objective that the following hints on pickling are published. The methods described below have been proved so effective that it can be definitely stated that, if they are adopted in their entirety, there will be no Bunt in the Victorian wheat crops this year.

Bunt, known also as Ball Smut or "Stinking" Smut (on account of the characteristic odour of affected plants), is a disease common enough in most wheat districts, and one which makes its appearance in the crop about harvest time. At first sight, the affected ear appears normal, but closer inspection shows that the grains have been replaced by spherical bodies, about the size of a wheat grain, containing a mass of black powdery dust enclosed in a tough skin. These bodies are known as smut balls, and the black powder is really a mass of the seeds of the fungus causing the disease. Every smut ball contains millions of smut seeds, each of which, under favorable circumstances, is capable of infecting a wheat plant. If grain carrying smut is sown without pickling, the smut seeds germinate with the wheat, and penetrate the young wheat seedling. The fungus has now gained entrance into

the young wheat plant, and continues to grow with it. Outwardly, the plant appears to be growing normally, and not until harvest time is it noticed that the grain in the wheat head has been replaced by smut balls.

Under Victorian conditions, smut balls shed on the ground at harvest time are not capable of infecting the succeeding crop. The only way in which a crop may be infected is by sowing grain with one or more smut seeds adhering to it. These seeds are so minute that grain, which to the naked eye appears quite clean, may have some thousands of seeds adhering to it, particularly in the crease and the brush. For this reason it is never safe to omit pickling even though it is impossible to detect any smut balls in the seed.

Since a crop can become infected with bunt only by sowing grain infected with the living seeds of the disease, if these are removed or destroyed bunt-free crops should be assured. In actual practice, precautions have to be taken to ensure that the pickle is brought into contact with every seed of the disease, and that it is strong enough to destroy the smut seeds, but not strong enough to affect the germination of the wheat.

For many years, what are known as the wet pickles were commonly used. In these, the wheat seed is immersed in a solution of either copper sulphate (bluestone) or of formalin. It was found that, when properly applied, these solutions gave complete control of the disease, but frequently they also affected the germination of the wheat. Accordingly, research was carried out to discover a pickle which would be effective in the control of the disease and yet would not hinder the germination of the seed. As a result, the method of dry pickling, in which copper powders are dusted over the grain, was devised. In the last few years, the Department of Agriculture has made exhaustive tests to compare the action of these pickles, and its conclusions are based on the results of many carefully conducted experiments.

Bluestone Pickling.

In pickling with bluestone the solution should be made by dissolving bluestone at the rate of 1¼ lb. to every 10 gallons of water used, and the time of immersion should be three minutes. The bluestone should be weighed, the water measured, and the time taken by a watch or clock. Farmers are warned against judging the strength of the solution by the colour, and of fixing the time of immersion by guesswork, as most of the failures in using this pickle are due to these causes. The most satisfactory method of pickling with bluestone is to pour the wheat into a perforated copper container, which is dipped into the solution. The wheat is thoroughly stirred with a stick. Any unbroken smut balls will float to the surface and can then be skimmed off. Unbroken smut balls are not easily penetrated by the pickle, and, unless removed, are liable to be broken when passing through the drill, thus reinfecting the treated seed. With bluestone this danger is considerably reduced, because the coating of bluestone on the grain largely protects it against re-infection. Such is not the case with formalin, and where this pickle is used even greater care must be taken to skim off unbroken smut balls.

If a perforated copper container is not available (other metal vessels are not suitable), the wheat may be pickled in the bag, but no attempt should be made to pickle a whole bag at a time. The bag should be divided into two or three "butts," and each butt thoroughly rinsed in the solution to remove any air bubbles, and allow the grain to be thoroughly wetted. If there are any smut balls present in the grain, the mouth of the bag should be rolled back, and the grain stirred while it is in the solution, so that the balls may be skimmed off. Another satisfactory method is to use a layer of stout hessian as an inner envelope of the cask containing the solution; a butt of wheat can be poured into this, thoroughly stirred, and the floating smut balls skimmed off.

Should it become necessary to replenish the solution, a fresh supply must be made up in exactly the same way as the original solution, and added from time to time. As bluestone is only slowly soluble in cold water, it will be found advantageous to dissolve it in a small quantity of hot water, and then add sufficient cold water to make up the right quantity.

After the wheat has been immersed for three minutes it should be removed and allowed to drain. Precautions must be taken against re-infection, and the bags in which it is to be placed should previously be immersed in the pickle.

Wheat pickled with bluestone should be sown within a day, as, if sowing is delayed, the effect on the germination becomes much more serious.

The main advantage that can be claimed for bluestone pickling is that it provides the wheat with a good protection against re-infection. On the other hand, it has a more serious effect on the germination of the seed than any other pickle. Not only is from 15 to 20 per cent. of the wheat killed even when sown quickly after treatment, but the germination of the unkilled grains is retarded considerably. Once unpickled wheat begins to sprout, it generally all comes through the ground in three or four days. On the other hand, wheat pickled with bluestone takes twice as long. This is particularly serious in the case of wheat sown on land liable to surface caking, and for late sowing, where speedy germination is of vital importance. For these reasons, the Department does not favour the use of bluestone, and recommends farmers to use either formalin or the dry pickle.

Formalin Pickling.

The correct strength of the formalin solution is 1 lb. of formalin to 45 gallons of water. The time of immersion is three minutes. The warning given against guessing the strength of the solution or the time of immersion applies equally to formalin as to bluestone pickling.

The methods of pickling described for bluestone can also be used in the case of formalin, but as this pickle gives little protection against re-infection, even greater care must be taken to remove any unbroken smut balls, and the use of the perforated hopper already described is strongly recommended, as the substitutes will be found cumbersome and imperfect.

Formalin, when properly used, is a very effective bunticide, and is easy to prepare. It does not kill nearly as much wheat as bluestone, nor does it usually delay germination to the same extent. But care must be taken not to pickle far ahead of the seeding requirements, for, if formalin-pickled seed is kept for any length of time before sowing, the germination of the seed may be seriously hindered. Neither should formalin-pickled seed be sown on a dry seed-bed, for if this is done a very unsatisfactory germination is likely to result.

Where farmers are forced to sow obviously smutted seed, they are advised to use formalin, as it has been found more effective in such cases than the dry copper powders.

Dry Pickling.

Apart from their effect on the germination of the wheat, the wet pickles have the disadvantage that the pickling must be done immediately prior to seeding, and time and labour must be devoted to this work just when the actual seeding of the crop requires the full man-strength of the farm.

Pickling with copper powder is free from these objections. The pickling can be done at any time previous to sowing, and the pickled seed can be stored without injury to its germination and without fear of attack by weevils. Tests conducted by the Department over a period of four years show that from 1½ to 2 oz. of copper powder evenly applied to each bushel of wheat will control bunt quite satisfactorily, except where the seed is heavily smutted. As stated previously, where such wheat has to be sown, formalin should be used in preference to the copper powders.

Wheat pickled with copper powder germinates as well and as quickly as unpickled wheat. Indeed, in the departmental tests the treatment with copper powder has consistently increased the germination by 2 per cent. This is due probably to the coating of copper powder protecting the grain against moulds in the soil.

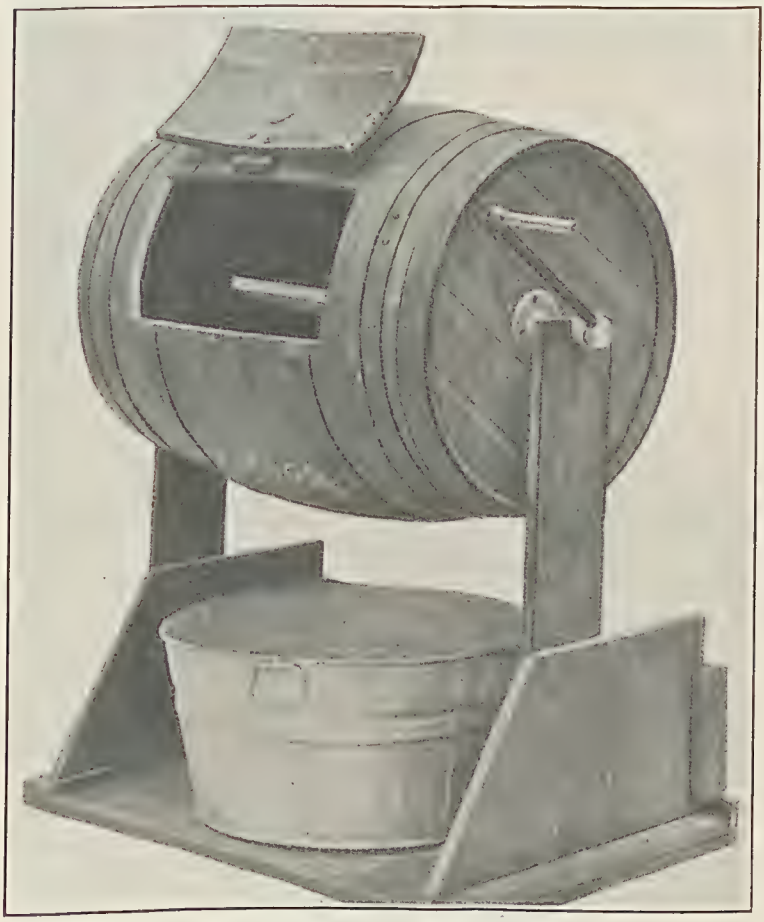
There are a number of dry copper powders for pickling on the market. These vary in composition, but most of them appear to be satisfactory. When purchasing, farmers should insist on a guarantee of at least 50 per cent. copper-content, and a weight of not more than 36 lb. per cubic foot. The powder should be dusted on the wheat at the rate of 1½ to 2 oz. per bushel. The whole of this quantity will rarely adhere to the grain, but it should be applied, and any surplus sieved off.

A mechanical mixer should be used, and it should thoroughly and evenly coat every grain with powder. There are many machines on the market, some of which are much more effective than others, and, before purchasing, the farmer should see them in operation. The requirements of a good machine are—

(1) It should be capable of coating each grain evenly with powder. To do this, the grain must be well shaken up in the mixing part of the machine, and the powder must be fed in at a uniform rate.

(2) It should remove all excess powder. A good sieving area is required, and it is desirable that the wheat should be shaken or run across the sieve rather than merely dragged across it in a mass.

(3) The machine should be reasonably dust-proof. Most of the present-day machines are satisfactory in this respect, and trouble with dust usually arises at the grain outlet or from



A Simple Home-made Pickling Machine.

dust working through the bags. A canvas apron round the outlet and over the mouth of the bag will prevent dust from rising there, and the damping of the bags a day or two before pickling will help to prevent dust working through them. Dry pickling should be done in the open, as the dust, though not injurious to health, is irritating and objectionable when inhaled.

If there is excess free dust on the treated grain, sowing should be done through the oat-runs of the drill, as otherwise the drill is apt to be clogged. A little kerosene applied to the cups of the drill will assist greatly in allowing them to run freely. It is also a good plan before starting up in the mornings to free the cups by turning the driving shaft back with a spanner.

The use of the dry pickle is rapidly extending, and it should be employed in all cases of dry sowing and wherever the germination conditions are not quite favorable.

Most of the machines for dry-pickling or dusting cost from £14 to £20, but unless the farmer intends to sow a fairly large area annually it would be unwise to purchase such a machine. These machines are capable of treating from ten to twelve bags of seed per hour, and should it be possible to obtain the loan of one from a neighbour a large quantity of seed could be treated in a day. Those who are unable to borrow a machine and have not a large quantity of seed to treat will find the barrel type of mixer quite suitable. Satisfactory results are given by this method of treatment, but it is slower and more laborious than mixing with the more elaborate machines. A well constructed barrel mixer of this type can be purchased for less than £5.

Usually, however, there is sufficient material about the farm from which a barrel mixer can be constructed. An old oil drum or cream can is very suitable for this purpose. The axle should be placed straight through the centre, and slats should be fixed to the inside of the drum in order to agitate the grain.

The illustration on page 167, taken from the United States of America Department of Agriculture Farmers' Bulletin, No. 1540, shows the simple construction of this machine. With this type of mixer grain and powder must be measured into the barrel each time, and care must be taken not to overfill it. Most efficient mixing is obtained when the barrel is about one-third full.

SUMMARY.

1. Ball smut can be completely controlled by proper pickling.
2. There are three effective methods of pickling in common use—
   (*a*) Bluestone, 1¼ lb. to 10 gallons of water. Time of immersion, three minutes. Bluestone has a serious effect on the grain, and should not be used where the germination is likely to be slow, or where the soil skins over.
   (*b*) Formalin, 1 lb. to 45 gallons of water. Time of immersion, three minutes. Formalin is the most effective pickle. It kills but little wheat, and usually delays germination to a less extent than does bluestone. It should not be used for dry sowing.
   (*c*) Copper powders, 1½ to 2 oz. per bushel, control smut satisfactorily except where the wheat is heavily bunted. They do not affect germination, and are particularly suitable for use in case of dry sowing or where the germination conditions are not quite favorable.

Profitable Manuring

Quantities Recommended

By

J. BRAKE, B.Ag.Sc.,

Senior Inspector of Agriculture

For greatest profit in wheat growing a knowledge of the quantities of manure most profitable to sow with the crop is essential, and, as many will be growing wheat this year for the first time, the results of recent experiences in the use of manure should be of assistance.

Obviously it is most important that the full quantity necessary to return a maximum yield should be applied, as the increased yield occasioned by the additional fertilizer might well constitute most of the profit.

It is a well-known fact that Victorian soils are deficient in a very important plant food—phosphoric acid; the chemical analysis of practically every Victorian soil indicates this, and it is borne out by the results of experimental work where, in every instance, the use of phosphatic manure, especially superphosphate, gives a marked increase in yield.

Superphosphate is manufactured by the addition of sulphuric acid to rock phosphate, and consists, roughly, of one part of lime in union with one part of phosphoric acid, plus gypsum. The great advantage of superphosphate over other phosphatic manures lies in its high percentage of water soluble phosphoric acid. This is of importance, because plants are able to make use only of plant food which has been dissolved in the soil moisture.

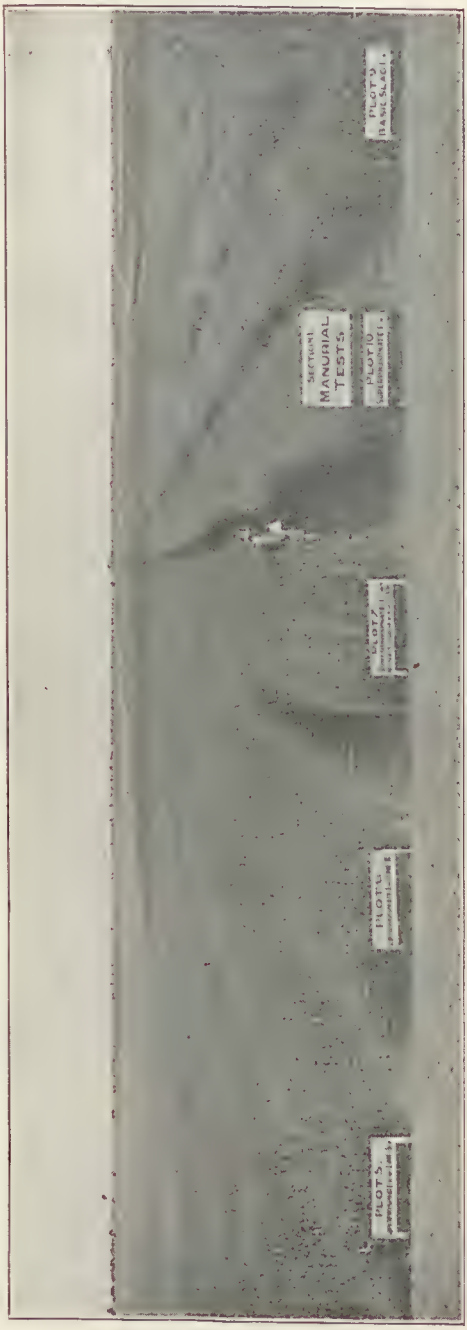
The introduction of superphosphate for wheat-growing in Victoria is fairly recent, this manure having first been used in applications of about 30 lb. per acre early in the present century. Its value in raising yields was quickly recognized, however, and it is now used in very much larger dressings throughout the State. The importance of using optimum quantities is obvious, and as these amounts vary according to district, soil, and rainfall, experimental plots have been established in various districts to determine the best quantities to apply.

Notwithstanding the results obtained from these plots, however, the quantity of superphosphate generally used is, on the average, well below the optimum. Official statistics of 1928-29 show that the average amount applied with wheat was only 82½ lb. per acre, whereas the results of the tests show that in all districts a greater quantity than this is necessary for maximum profit.

For example, at Willaura, taking the price of wheat at 4s. 3d. per bushel, and the cost of manure at £5 5s. per ton, the average results of the last four years show that super. at 1½ cwt. per acre gives a return, after deducting the cost of manure, of 46s. 11d. more than that obtained without manure, whereas 1 cwt. gives an increase of 41s. 1d.; and, if the dressing be increased to 2 cwt. per acre, the extra return is decreased to 41s. 9d. per acre. Other manures, such as basic phosphate and blood and bone, are not so profitable.

At the State Research Farm, Werribee, a similar test, conducted for the last fourteen years, illustrates much the same thing, 1½ cwt. of superphosphate, in this case, giving an increased return over the unmanured plot of 47s. 5d., whereas 2 cwt. gave 46s. 3d. and 1 cwt. 40s. per acre.

If we work out the yields in the various districts in this way, we are able to



Manurial Trials at Longerenong College.

determine the most profitable dressings for use under the different conditions.

In the northern Mallee 90 lb. of superphosphate consistently gives best results on good fallow, while heavier applications are required in other parts of the State. The Swan Hill, Rainbow, and Warracknabeal tests have indicated 1½ cwt. superphosphate as the most profitable dressing for the fringe Mallee, and at Longerenong, on best Wimmera soil, the results from the plots are in favour of applications up to 2 cwt. per acre.

In the wheat-growing areas of the North-east and the Goulburn Valley a dressing of 1 cwt. of superphosphate per acre generally gives the best returns.

The recommendations as to amounts of superphosphate to use in the various districts, on well-prepared land, may be tabulated as follows:—

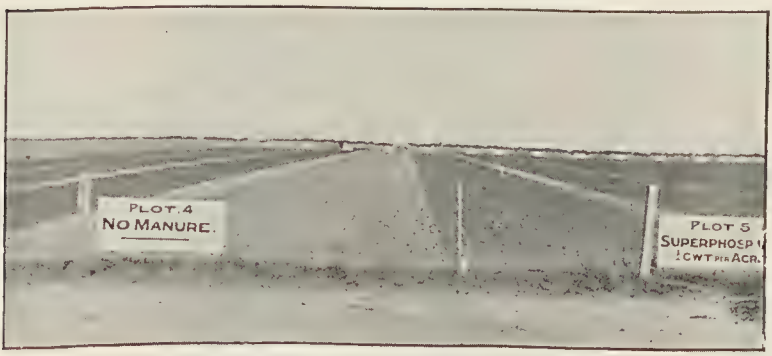
Newer Mallee.—90 lb. per acre.

Older Mallee.—1 to 1½ cwt. per acre.

Wimmera.—1½ cwt. per acre.

Western and Central Districts.—1½ cwt. per acre.

North-east and Goulburn Valley.—1 cwt. per acre.



Manurial Plots—State Research Farm, Werribee.

The advantages to be gained from the use of superphosphate are not limited to the increase of yields. Being a plant-food the phosphoric acid naturally strengthens the plant in every way, enabling it to withstand unfavorable conditions to a much greater extent than it could without the aid of the fertilizer.

A liberally-manured crop will more successfully resist diseases, such as "take all," and does not require so much rain to enable it to yield well.

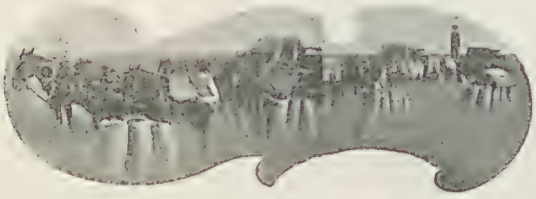
Superphosphate helps the plant to make a quicker germination and causes earlier maturity than is the case without manure. In wet, cold districts particularly, this is an important consideration.

The beneficial effect of superphosphate is to be seen on the land for some years after application. Since all the phosphoric acid in an application is not used during the first year, the stubbles and subsequent grass are consequently very much improved in food value.

As it is likely that a considerable area of land on which the crop failed last year will be sown again this season, it should be mentioned that about two-thirds of the normal manurial dressing is recommended for use in such cases.

The effects of superphosphate can be stated briefly as—

1. Increases crop yield.
2. Quicker germination.
3. Better root development.
4. Earlier maturity of crop.
5. Helps crop resist unfavorable conditions.



Since 1836 Victoria has **EXPORTED**
Wool, Wheat, and Flour
to the value of

£578,681,129

The total value of Gold **RAISED**
in Victoria since its first
discovery is

£302,711,924

STANDARD HERD RECORDS

for Quarter ended 31st December, 1929.

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 285, of which 188 qualify for the certificate.

The amount of butter fat required for qualification varies according to the age of the animal (up to 5 years at time of calving), the standards being as follow:—

Junior 2 year old (under 2½ years at time of calving)	200 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving)	225 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving)	250 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving)	275 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving)	300 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving)	325 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
W. H. Adams, Amey's Track, via Foster	4	..	Ayrshire	Lyndon Park Violet ..	Jr. 2 yrs.	20513	18.2.29	273	11	4235	4·00	169·19	200	
				Lyndon Park Merless ..	Sr. 2 yrs.	20505	22.3.29	273	20	5,838	3·58	209·25	225	
				Lyndon Park Misty ..	Sr. 2 yrs.	20507	26.3.29	273	21½	5,723	3·55	202·97	225	
				Lyndon Park Milkmaid ..	Sr. 2 yrs.	20506	27.3.29	273	10	3,800	4·13	157·05	225	
N. B. Alston, Romsey	1	1	Jersey	Rosyth Lady Jessie ..	Sr. 2 yrs.	Vol. 16	11.2.29	273	16	4,896	5·65	276·43	225	
W. H. Atherton, Murraydale	3	2	Jersey	Rarity of Beverley	Jr. 3 yrs.	21096	10.1.29	273	..	5,969	5·22	311·83	250	
				Marmione	Mature	21094	29.1.29	273	..	6,023	4·73	285·01	350	407, 318
				Wattle Bloom of Beverley ..	Jr. 4 yrs.	18611	4.2.29	273	..	7,098	4·94	350·29	300	329, 343
W. K. Atkinson, Swan Hill	7	5	Milking Shorthorn	Comet 2nd of Willow Park ..	Jr. 3 yrs.	Vol. 8	7.1.29	273	20½	8,532	3·64	310·51	250	239
				Camelia of Willow Park ..	Mature	13206	7.1.29	273	36½	12,806	4·21	539·06	350	384, 441, 515
				Carnation of Willow Park ..	Mature	13226	12.1.29	273	16½	6,650	4·41	293·40	350	259, 266, 273
				Blush of Willow Park ..	Mature	11069	24.1.29	273	..	10,424	3·99	416·35	350	320, 368, 478, 494 565, 515, 398
				Fairy 3rd of Willow Park ..	Jr. 2 yrs.	..	26.1.29	273	..	6,383	3·86	246·37	200	
				Camelia 2nd of Willow Park	Jr. 3 yrs.	..	31.1.29	273	..	10,043	3·75	376·26	250	288
				Dulcie of Willow Park ..	Mature	13500	23.3.29	273	16½	7,829	4·05	316·84	350	270, 307, 274

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
W. H. Axford, Camperdown	4	4	Jersey	Leura Countess 2nd ..	Jr. 2 yrs.	24232	6.2.29	273	14½	4,812	4·78	230·21	200	
				Doreen of Springvale ..	Jr. 4 yrs.	21162	8.3.29	273	24	6,946	5·39	374·53	300	
				Springvale Maisie .. .	Jr. 2 yrs.	Vol. 16	17.3.29	273	28½	6,725	4·63	311·60	200	
				Springvale Dora	Jr. 2 yrs.	,,	28.3.29	273	23	6,106	5·18	316·30	200	
A. V. Becher, Welshpool	1	1	Friesian	Strathardle Lily's Favourite..	Jr. 3 yrs.	2936	17.1.29	273	27½	7,890	3·25	256·64	250	
F. Bidgood, Wodonga	2	2	Jersey	Staghorn Master's Cello ..	Jr. 2 yrs.	Vol. 16	28.2.29	273	14	4,844	6·04	292·56	200	
				Staghorn Handsome Madeira	Sr. 4 yrs.	18634	14.3.29	273	18½	7,539	4·61	347·49	325	
Mrs. A. J. Black, Mt. Noorat	1	1	Jersey	Noorat Gwyneth	Jr. 3 yrs.	22988	14.3.29	273	7	4,407	5·81	255·86	250	269
I. S. Black, Mt. Noorat Home Farm	2	1	Ayrshire	Purity of Ben Kell	Jr. 2 yrs.	15737	20.1.29	273	23	5,612	4·67	262·07	200	
				Janice of Sunnyside ..	Mature	12975	30.1.29	273	17½	7,449	4·56	339·39	350	
S. Bolton, Mannerim	2	1	Jersey	Virginia 2nd of Springhurst ..	Mature	14261	17.2.29	150	4	2,955	5·30	156·57	350	238. 308
				Noble Guitar 3rd of Banyule	Jr. 3 yrs.	18810	18.2.29	273	16½	4,940	5·82	287·60	250	260
D. Cameron and Son, Valencia Creek	2	2	Jersey	Eminent's Minnehaha 7th of Clarendon Eyre	Jr. 4 yrs.	21268	29.12.28	273	19½	6,647	4·83	321·22	300	302
				Studleigh Dianthus ..	Sr. 3 yrs.	21159	18.1.29	273	19½	7,730	6·13	474·01	275	347, 437
J. Canobio, Bena	5	1	Ayrshire	Frill of Glen Erin	Jr. 4 yrs.	13292	1.1.29	273	9½	5,475	4·27	233·91	300	
				Glen Erin Welcome.. ..	Jr. 3 yrs.	14595	30.1.29	240	4	4,740	3·82	180·88	250	
				Lorna of Gleneira	Mature	8453	30.1.29	273	22	6,803	3·88	263·85	350	
				Glen Erin Freckle	Jr. 2 yrs	16196	31.1.29	273	27	6,425	3·95	253·68	200	
				Adeline of Osborne Park ..	Mature	11916	24.2.29	240	4	4,845	3·92	190·01	350	

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb	
W. C. Cayley, Digger's-road, Werribee	3	2	Ayrshire	Miss Prim of Riversdale ..	Mature	13306	10.1.29	273	13½	8,153	4·13	337·10	350	227, 264, 280
				Riversdale Peggy	Jr. 3 yrs.	16571	27.2.29	240	14	6,555	4·07	266·53	250	
				Riversdale Frivolity ..	Sr. 2 yrs.	16569	13.3.29	273	19½	7,325	4·02	294·69	225	319
J. E. Chadderton, Hamilton	1	1	Jersey	Duchess 2nd of Glen Leigh ..	Mature	15463	7.2.29	273	28	7,449	5·92	440·61	350	348
R. M. Chirnside, Whittlesea	2	2	Jersey	Austral Valley Rosebud ..	Sr. 2 yrs.	23032	20.2.29	273	16½	4,958	6·17	305·99	225	
				Bruce Vale Fancy Starbright 2nd	Jr. 2 yrs.	Vol. 16	24.2.29	273	17	4,899	6·89	337·57	200	
C. Chitty, Kernot	2	2	Jersey	Ewelme Safrano	Jr. 2 yrs.	C. R.	27.2.29	273	16½	4,090	5·91	241·90	200	
				Ewelme Bluebell	Jr. 2 yrs.	,,	5.3.29	273	15	4,114	5·62	231·04	200	
W. J. Clark, Monomeith	1	1	Jersey	Glenavon Diana	Jr. 2 yrs.	Vol. 16	22.3.29	273	15	5,114	5·23	267·32	200	
J. Clyne, Upper Maffra West	5	5	Jersey	Jersey Vale Flower ..	Jr. 2 yrs.	Vol. 16	28.12.28	273	17½	5,579	5·23	291·94	200	
				Forty Winks of Paisley ..	Sr. 4 yrs.	17721	29.1.29	273	14½	6,138	5·60	343·57	325	317
				Jersey Vale Marigold ..	Jr. 2 yrs.	Vol. 16	19.3.29	273	18½	5,423	5·09	275·99	200	
				Paisley Petal 2nd	Jr. 2 yrs.	,,	22.3.29	273	13½	4,574	5·67	259·38	200	
				Jersey Vale Mistletoe ..	Jr. 2 yrs.	,,	26.3.29	273	18½	5,592	4·82	269·29	200	
Cockbill Bros., Bacchus Marsh	1	1	Ayrshire	Fulham Dot	Sr. 2 yrs.	16056	6.3.29	273	22	6,483	4·68	303·62	225	
Cockbill Bros., Rockbank	3	1	Ayrshire	Fulham Connie	Jr. 3 yrs.	14639	3.1.29	273	16	5,887	4·50	264·85	250	230
				Fulham Laughter	Jr. 2 yrs.	16057	19.1.29	273	13	4,280	4·44	189·92	200	
				Good Luck of Glenord ..	Mature	6253	21.1.29	273	17	7,485	4·52	338·61	350	368, 338, 341, 286

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
J. Cook, Toora	1	1	Jersey	Pretty Lady of Whare Koa ..	Mature	14143	18.2.29	273	23	6,891	5·93	408·94	350	345, 337, 419
H. A. Cooper, Trafalgar	1	1	Jersey	Glenloch Lady Mercedes ..	Sr. 3 yrs.	18671	3.3.29	273	18	6,389	5·32	339·81	275	
C. Coughlin, Yannathan	2	1	Jersey	Karowarra Quicksilver ..	Jr. 2 yrs.	Vol. 16	1.3.29	273	13	4,038	5·89	237·77	200	
				Aveley Valda's Petal ..	Jr. 2 yrs	,,	1.3.29	273	18	3,630	5·17	187·70	200	
A. Cox, Mt. Scoble, via Kyabram	2	2	Jersey	Tavistock Muriel	Jr. 2 yrs.	Vol. 16	24.2.29	273	20½	5,044	4·84	244·18	200	
				Tavistock Lassie	Sr. 4 yrs.	18458	24.2.29	273	24½	6,739	5·50	370·33	325	
E. E. Davis, Bass	2	2	Jersey	Blackwood Grove Perfection..	Jr. 2 yrs.	24323	27.1.29	273	17½	5,112	4·48	229·27	200	
				Blackwood Grove Daphne ..	Sr. 3 yrs.	23120	1 3.29	273	19½	5,889	4·93	290·56	275	277
E. Day, Penshurst	1	1	Jersey	Betty of Lone Gum ..	Mature	6834	6.1.29	273	22½	7,161	5·37	384·23	350	409, 525, 537
J. Dee, Nth. Clyde	2	2	Jersey	Clydevale Bright Star ..	Jr. 2 yrs.	24328	25.2.29	273	15	4,394	6·25	274·63	200	
				Clydevale Lady Pearl ..	Jr. 2 yrs.	24331	8.3.29	273	9	3,239	6·32	204·81	200	
T. G. Dellar, Portland	1	1	Jersey	Rosemont Jenny Lind ..	Sr. 3 yrs.	23396	28.3.29	273	..	5,496	6·12	336·12	275	
Department of Agriculture, Burnley	1	..	Jersey	Yarra Brae Flash	Mature	C.R.	12.3.29	273	7	3,266	6·17	201·36	350	357, 199, 214

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
Department of Agriculture, Werribee	1	1	Friesian	Victoria Patchwork ..	Mature	1706	26.2.29	273	39	14,303	3·69	527·85	350	304, 273, 528
Department of Agriculture, Werribee	7	5	Red Poll	Victoria Village Belle ..	Sr. 2 yrs.	1522AA	5.1.29	273	27½	8,441	4·23	356·80	225	
				Victoria Blue Ribbon ..	Mature	1149A	11.1.29	273	20½	8,933	4·54	405·18	350	248, 359
				Victoria Rose Regal ..	Mature	560AA	1.3.29	273	18	7,673	4·05	310·95	350	181, 306, 278
				Victoria Distant View ..	Mature	1152A	2.3.29	273	26½	8,925	4·49	401·06	350	322, 385
				Victoria Braid	Jr. 3 yrs.	1654A	7.3.29	273	24	7,392	4·31	318·25	250	
				War Wings	Mature	259A	21.3.29	273	18	8,648	4·31	372·93	350	289, 339, 424
				Gelderlana A	Mature	387C	24.3.29	273	29	10,646	4·06	431·77	350	281, 366, 408
Agricultural College, Dookie	3	3	Ayrshire	Dookie Adella's Maid ..	Jr. 2 yrs.	Vol. 22	28.2.29	273	22½	7,125	4·14	294·73	200	
				Dookie Beeswax	Sr. 2 yrs	„	13.3.29	273	23	8,070	4·27	344·85	225	
				Dookie Clare	Jr. 3 yrs.	17774	22.3.29	273	18½	7,415	3·78	280·44	250	240
P. J. Ducat, Ardmona	2	2	Jersey	Duchess 6th of Goulburn ..	Mature	17676	13.2.29	273	22½	6,443	5·80	373·68	350	251
				Mardi of Airlie	Mature	18698	16.3.29	273	18	7,322	5·23	382·99	350	372
T. J. Edwards, Myrtlebank, via Sale	2	1	Jersey	Studleigh's Empire ..	Jr. 4 yrs.	19878	5.3.29	273	15	4,349	6·62	288·04	300	209, 253
				Werribee Islands Sultana ..	Jr. 3 yrs.	21161	23.3.29	273	..	5,135	5·75	295·35	250	230
A. J. Eldridge, Noorat	1	..	Friesian	Kerami Spring Flower ..	Jr. 2 yrs.	2809	21.3.29	273	26½	8,459	3·52	297·38	200	
A. E. Ellis, Archie's Creek	1	..	Jersey	Bonnie Brae Maid	Jr. 4 yrs.	Vol. 16	7.2.29	273	7½	4,223	6·45	272·43	300	290

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
A. E. Enders, Stanhope	2	2	Friesian	Eurobin Sylvia Girl ..	Jr. 2 yrs.	C.R.	23.3.29	273	25	10,298	3·20	329·55	200	
				Eurobin Oakwood Eclipse ..	Jr. 2 yrs.	,,	23.3.29	273	37	10,646	3·39	361·11	200	
T. R. Findlay, Leitchville	1	..	Jersey	Perree's Capture of Leven Brae	Mature	16265	22.3.29	273	22	6,833	4·92	336·23	350	217, 333, 367
Foster Bros., Boisda'e	4	3	Jersey	Nightshade 2nd of Springhurst	Mature	14255	28.1.29	273	10½	4,893	6·30	308·44	350	333, 394, 417, 470
				Noble's Queen of Avalon ..	Sr. 4 yrs.	16603	13.2.29	273	12½	4,842	6·87	332·88	325	208, 294
				Heather 3rd of Springhurst ..	Sr. 3 yrs.	18931	3.3.29	273	23½	8,535	5·12	436·60	275	316, 364
				Lady Marge 9th of Jerseyholm	Sr. 2 yrs.	21329	22.3.29	273	14½	5,355	5·69	304·64	225	181
Mrs. M. and W. A. Francis, Kilcunda	3	1	Ayrshire	Hillcrest Clarice	Jr 2 yrs.	18250	31.12.28	273	..	3,654	4·34	158·62	200	
				Hillcrest Edna	Sr. 2 yrs.	18251	6.1.29	273	..	4,196	3·77	158·18	225	
				Hillcrest Betty	Jr. 2 yrs.	18249	12.1.29	273	..	5,400	4·16	224·85	200	
N. R. Gange, Berrybank	3	..	Ayrshire	River Glen Fuchsia	Mature	14812	22.3.29	273	17	6,266	3·73	233·67	350	358
				River Glen Bonnie	Jr. 3 yrs.	16564	25.3.29	240	4	3,870	4·43	171·32	250	199
				River Glen Daffodil ..	Sr. 3 yrs.	14810	27.3.29	273	8	4,527	3·73	168·67	275	263
R. G. Gay, Nth. Devon	2	2	Jersey	Buttercup of Elm Grove ..	Sr. 3 yrs.	21303	21.3.29	273	..	8,457	5·32	450·22	275	
				Lassie Fowler 12th of Melrose	Mature	16697	22.3.29	273	..	7,253	5·76	417·85	350	280, 344
Gibson Bros., Trafalgar	1	1	Jersey	Leathorne Buttercup 3rd ..	Sr. 2 yrs.	23162	14.1.29	273	16½	4,644	6·20	287·94	225	
R. Goodman, Kilmany	2	..	Ayrshire	Floss of Roseneath ..	Mature	7333	19.1.29	273	5½	4,470	4·16	185·85	350	232, 314, 169, 241, 166
				Roseneath Fanny	Jr. 3 yrs.	16588	10.2.29	273	5½	4,172	4·39	183·20	250	185

STANDARD HERD RECORDS—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
E. Hall, Tongala	3	..	Jersey	Melwood Thelma	Jr. 2 yrs.	Vol. 16	28.12.28	273	7½	2,853	5·56	159·05	200	
				Melwood Corella	Jr. 3 yrs.	23173	28.12.28	273	8	3,387	5·10	172·82	250	145
				Queenie of Comely Banks ..	Mature	15497	31.12.28	273	13½	5,146	4·44	228·65	350	254, 301, 345, 234
S. C. Handley, Dandenong	1	1	Jersey	Aveley Comedienne ..	Jr. 2 yrs.	Vol. 16	17.3.29	273	13½	4,419	5·30	234·15	200	
J. E. Handbury and Sons, Toora	1	1	Jersey	Tooravale Noreen	Jr. 2 yrs.	23191	5.3.29	273	14	4,535	6·40	290·30	200	
D. Harker, Caldermeade	2	..	Ayrshire	Petals of Rankeillor ..	Mature	9218	9.3.29	273	23	6,800	4·93	334·97	350	329, 403
				Thirlmere Sparkle ..	Sr. 2 yrs.	16846	20.3.29	273	17	4,691	4·72	221·27	225	
G. Harker, Yannathan	1	..	Ayrshire	Ayrgarth Progress	Jr. 2 yrs.	17201	31.12.28	240	4	3,480	4·03	140·15	200	
W. Harker, Caldermeade	1	1	Ayrshire	Wayside Lottie	Jr. 2 yrs.	16901	18.3.29	273	19	4,851	4·17	202·07	200	
F. Harrison, Frankston	2	1	Jersey	Walbundry Alfa	Jr. 4 yrs.	21326	22.1.29	273	15	4,454	5·80	258·16	300	251
				Walbundry Gama	Sr. 2 yrs	Vol. 16	19.3.29	273	13	3,580	6·30	225·62	225	
T. Harvey, Boisdale	3	3	Jersey	Daisy 6th of Jerseyholm ..	Mature	5917	7.2.29	273	22	8,027	4·72	378·77	350	332, 415, 373, 392 419, 436, 464, 380, 436
				Empress 3rd of Jerseyholm ..	Mature	10255	8.2.29	273	31	8,495	5·20	441·72	350	396, 391, 478, 497, 474
				Empress 9th of Jerseyholm ..	Jr. 3 yrs.	21328	23.3.29	273	15	6,312	6·44	406·42	300	329

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
H. R. Heard, Derrinallum	4	2	Ayrshire	Gladys of Sparrovale ..	Mature	6355	14.3.29	273	11½	6,792	3·96	269·24	350	278, 228, 273, 292, 305, 307
				Craigmore Sylvie	Sr. 2 yrs.	15908	18.3.29	273	10½	6,107	4·00	244·31	225	244
				Craigmore Pearl	Jr. 4 yrs.	14922	23.3.29	273	6½	4,715	4·43	208·89	300	251
				Annie Laurie of Sparrovale ..	Mature	9091	25.3.29	273	22	10.245	3·98	407·32	350	254, 308
W. Henderson, Grasmere (Home Farm)	1	1	Ayrshire	Carracoorte Pearl 9th ..	Jr. 2 yrs.	17475	27.1.29	273	..	6,269	4·35	272·69	200	
W. Henderson, Grasmere (Share Farm)	4	3	Ayrshire	Viola 8th of Carracoorte ..	Jr. 3 yrs.	15863	31.12.28	273	12	6,528	4·36	284·46	250	220
				Carracoorte Dahlia 5th ..	Sr. 2 yrs.	17457	7.3.29	240	4	3,795	4·07	154·30	225	
				Carracoorte Minnie 5th ..	Sr. 2 yrs.	17473	16.3.29	273	20	6,713	4·31	289·47	225	
				Carracoorte Lizzie 2nd ..	Sr. 2 yrs.	17470	17.3.29	273	15½	5,226	4·87	254·35	225	
E. H. Howlett, Morwell	2	1	Jersey	Lorna of Latrobe	Mature	16658	23.1.29	273	18	5,823	5·08	295·53	350	239
				Latrobe Lily 4th	Jr. 2 yrs.	24399	10.2.29	273	..	4,389	4·81	211·06	200	
A. Hubbard, Yarra Glen	4	1	Ayrshire	Lovely 2nd of Homeleigh ..	Mature	6398	13.2.29	273	12	4,976	4·42	219·91	350	312
				Melba of Glenholme ..	Mature	11091	15.2.29	273	8½	6,005	5·20	312·04	350	384
				Mernda of Burnside ..	Mature	11092	1.3.29	240	4	5,790	4·36	252·57	350	280
				Emoh Ruo Sweet Maid ..	Sr. 3 yrs.	14948	29.3.29	273	..	7,920	4·11	325·71	275	284
J. Hutchinson and Son, Somerville	1	1	Jersey	Somerville Lettie	Jr. 2 yrs.	Vol. 16	21.2.29	273	15	4,923	5·53	272·04	200	
G. A. Kent, Archie's Creek	1	..	Ayrshire	Blossom of Woolamai Park ..	Mature	11153	27.3.29	273	11	7,572	4·40	333·43	350	282, 312, 297, 335

STANDARD HERD RECORDS—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
T. Knowles, Dandenong	3	1	Ayrshire	Plum of Invergorden ..	Jr. 4 yrs.	13235	31.12.28	180	13½	4,800	4·26	204·61	300	261, 259
				Fernhill Betty	Jr. 4 yrs.	15539	7.1.29	273	4½	7,229	4·47	322·82	300	300
				Dandy Nanette	Jr. 3 yrs.	15029	7.2.29	273	15	5,565	4·38	243·91	250	231
P. H. Lawrence, Tarrawarra	1	1	Jersey	Charming Beauty of Blackwood Valley	Mature	14165	28.2.29	273	26½	6,467	5·52	356·66	350	221
Mrs. E. M. Lennie, Tongala	1	..	Jersey	Merella of the Valley ..	Mature	17777	24.3.29	273	22	6,065	5·53	335·69	350	247, 352, 398
Longerenong Agricultural College, Dooen	1	..	Ayrshire	Banksia of Longerenong ..	Mature	12431	23.3.29	273	9	6,873	4·02	276·02	350	283, 276, 313, 225
C. G. Lyon, Heidelberg	7	7	Jersey	Banyule Molly 24th ..	Jr. 2 yrs.	24457	8.1.29	273	18½	5,532	5·13	283·92	200	
				Banyule Tiddlewinks 3rd ..	Jr. 2 yrs.	24473	3.2.29	273	28⅝	8,430	5·46	460·45	200	
				Banyule Silvermine 44th ..	Jr. 2 yrs.	24464	8.2.29	273	17¼	5,461	5·42	295·99	200	
				Banyule Silvermine 45th ..	Jr. 2 yrs.	24465	10.2.29	273	24	7,167	5·63	403·79	200	
				Banyule Molly 25th ..	Jr. 2 yrs.	24458	12.2.29	273	19½	6,481	5·79	375·04	200	
				Aria of Banyule	Jr. 3 yrs.	18802	10.3.29	273	21½	7,857	5·22	410·25	250	368
				Silvermine 38th of Banyule ..	Jr. 3 yrs.	18817	12.3.29	273	16½	5,528	5·75	317·72	250	310
C. W. W. Macauley, Rochester	2	2	Jersey	Taranah Daisy	Sr. 2 yrs.	23291	5.1.29	273	17	6,188	5·06	313·36	225	204
				Taranah Princess	Jr. 2 yrs.	C. R.	26.2.29	273	14½	4,301	5·75	247·52	200	
Miss C. E. McClelland, Tunstall	1	1	Jersey	Poppy of the Elms ..	Jr. 4 yrs.	21447	13.2.29	273	25½	7,035	5·05	355·25	300	266, 380

STANDARD HERD RECORDS—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
J. McDougall, Byaduk	2	2	Jersey	Novelty of Parkview ..	Mature	17791	8.3.29	273	22	8,877	5·27	467·51	350	374, 398, 419
				Jessie of Parkview	Sr. 4 yrs.	18827	11.3.29	273	24	7,829	5·05	395·42	325	314, 367
Messrs. I. McErvale and Sons, Camperdown	2	1	Jersey	Daphne of Colac	Mature	14980	16.2.29	273	27	7,076	5·26	372·20	350	261
				Cherry of Comely Banks ..	Mature	17737	5.3.29	273	16½	5,358	5·74	307·70	350	190
Messrs. G. A. McNabb and Son, Irrewillipe East	3	2	Jersey	Easter Daisy of Springhurst ..	Sr. 3 yrs.	21607	3.2.29	273	19	7,929	4·54	359·80	275	293
				Mendip Vanilla 2nd ..	Sr. 2 yrs.	23465	28.2.29	273	15½	7,086	4·88	345·46	225	281
				Alsyke 3rd of Springhurst ..	Sr. 4 yrs.	16960	20.3.29	273	10	5,748	4·79	275·61	325	254, 318, 249
Mesdames McWhae and Silvester, Merino	5	1	Guernsey	Knightlea Favourite ..	Jr. 3 yrs.	1407	15.1.29	273	9	3,764	5·61	211·11	250	288
				Spurfield Gloria	Jr. 3 yrs.	1410	23.1.29	273	9½	3,974	4·89	194·40	250	266
				Minnamurra Orama ..	Jr. 4 yrs.	490	6.2.29	273	20½	4,736	5·35	253·32	300	442
				Wollongbar Princess May 6th	Sr. 3 yrs.	1428	17.3.29	273	20	7,428	5·00	371·68	275	414
				Minnamurra Sunbeam ..	Mature	1234	23.3.29	273	15½	6,083	4·50	273·60	350	383
Messrs. Maher Bros., Seymour	1	1	Ayrshire	Satinbird of Gowrie Park ..	Mature	13854	1.3.29	273	18	8,747	4·21	368·05	350	
R. H. Maher, Tongala	1	1	Jersey	Rosemont Lassie Fowler 3rd ..	Jr. 2 yrs.	Vol. 16	3.2.29	273	12½	4,379	5·76	252·31	200	
A. J. Mapleson, Jindivick	1	1	Jersey	Purity's Last Edition of Hazeldale	Mature	13757	3.2.29	273	22½	7,686	5·68	436·72	350	381
E. M Middleton, Hamilton	2	2	Jersey	Kyora Bettws-Y-Coed ..	Jr. 2 yrs.	Vol. 16	31.1.29	273	21½	5,933	5·77	342·16	200	
				Velveteen of Castlemaddie ..	Jr. 2 yrs.	„	20.2.29	273	..	7,035	5·53	389·04	200	

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
R. K. Milne, Camperdown	3	2	Jersey	Gold Leaf of Brookside ..	Mature	10233	22.1.29	273	27	7,522	5·50	413·72	350	
				Stonehaven Golden Hope ..	Jr. 4 yrs.	23323	26.2.29	273	11½	3,884	6·12	237·89	300	
				Stonehaven Golden Sunset ..	Jr. 2 yrs.	24514	9.3.29	273	13	3,954	6·12	242·00	200	
E. Nicholls, Springhurst	3	2	Jersey	Pearl of Blowering	Sr. 3 yrs.	21539	10.1.29	273	15½	5,810	4·70	273·31	275	303
				Maize Chief's Bessie of Blowering	Sr. 3 yrs.	21538	7.3.29	273	6	4,286	6·69	286·74	275	
T. M. Noble, Maffra	1	1	Jersey	Wompini Duchess	Jr. 3 yrs.	Vol. 16	21.3.29	273	24	6,345	5·46	346·43	250	
B. R. O'Meara, Caldermeade	2	...	Ayrshire	Scotswood Modesty ..	Mature	15490	25.2.29	273	9½	7,397	4·19	310·12	350	232. 251
				Scotswood Sylvia	Mature	10321	15.3.29	273	19½	7,565	4·01	303·27	350	213, 194, 292, 201, 347
Mrs. L. Orchard, Grahamvale	3	2	Jersey	Daphne of Jersey Vale ..	Mature	15578	29.12.28	273	..	6,195	5·90	365·50	350	269, 332
				Jersey Vale Petal ..	Jr. 2 yrs.	Vol. 16	21.1.29	273	..	4,880	4·52	220·75	200	
				Jersey Vale Mayflower ..	Jr. 3 yrs.	24542	8.2.29	273	..	4,461	5·10	227·37	250	
Mrs. A. C. Overend, Sale	4	4	Jersey	Waratta Elvie Bell ..	Jr. 2 yrs.	23504	30.1.29	273	17	5,016	5·26	263·66	200	
				Waratta Emma Bell ..	Jr. 2 yrs.	23505	13.2.29	273	20	5,654	5·55	313·90	200	
				Waratta Esther Bell ..	Jr. 2 yrs.	23506	26.2.29	273	13½	4,319	5·00	216·02	200	
				Sparkle 9th of Jerseyholm ..	Sr. 4 yrs.	13358	2.3.29	273	14	5,777	5·94	342·90	325	307, 408
I. Padgett, Werribee Sth.	2	2	Friesian	St. Alban's Tulip Avon ..	Jr. 2 yrs.	2607	10.1.29	273	37	11,523	3·19	368·07	200	
				St. Alban's Ina Sylvia ..	Jr. 4 yrs.	2593	15.1.29	273	47	16,890	5·51	592·77	300	
W. Parbury, Wesburn	1	..	Jersey	Sunshine 7th of Brookfield ..	Jr. 4 yrs.	18898	5.3.29	273	19	6,132	4·89	299·89	300	195, 257

Standard Herd Records—*continued*.

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
Pettitt Bros., Geelong	1	1	Ayrshire	Blinkbrae Beautiful 2nd ..	Jr. 2 yrs.	15762	8.2.29	273	17	5,895	4·41	260·09	200	
J. Phillips, Murraydale	2	2	Jersey	Peri Carnation 3rd	Jr. 2 yrs.	Vol. 16	1.1.29	273	13	4,463	4·64	207·25	200	
				Vanilla of Peri	Jr. 4 yrs.	18914	23.3.29	273	19	6,230	5·87	365·68	300	286, 302
J. Plattfuss, Tongala	9	8	Friesian	Greenvale Galatea Paxton ..	Jr. 2 yrs.	3101	31.12.28	273	19	7,848	3·44	270·02	200	
				Glen Elgin Patchline de Kol..	Jr. 3 yrs.	3095	1.1.29	240	4	6,420	3·35	214·98	250	
				Greenvale Topsy Paxton ..	Jr. 2 yrs.	3109	2.1.29	273	23½	7,190	3·23	232·23	200	
				Monavale Juno Paxton ..	Mature	169	22.1.29	273	28	13,428	3·37	452·63	350	326, 388, 545, 595, 424
				Greenvale Princess	Jr. 2 yrs.	Vol. 10	24.1.29	273	..	11,604	3·11	360·46	200	
				Greenvale Oakwood Empress	Jr. 2 yrs	3106	31.1.29	273	23½	7,390	3·48	257·33	200	
				Greenvale Mona 3rd ..	Jr. 2 yrs.	Vol. 10	2.2.29	273	24½	6,117	3·40	208·28	200	
				Greenvale Duchess Paxton ..	Jr. 3 yrs.	2768	5.2.29	273	31	13,946	3·34	465·62	250	325
				Greenvale Oakwood Daisy ..	Jr. 2 yrs	3104	17.3.29	273	24½	7,337	3·19	233·97	200	
Mrs. M. A. Poole, Caldermeade	4	4	Ayrshire	Bush Bank Fairy	Jr. 3 yrs.	15804	31.1.29	273	14	5,669	4·48	254·05	250	218
				Clairmont Princess	Sr. 2 yrs.	15870	26.2.29	273	..	5,325	4·49	239·06	225	
				Ryeland's Pearl	Sr. 2 yrs.	16599	6.3.29	273	..	7,262	4·27	310·02	225	
				Gleneira Hood	Jr. 2 yrs.	10854	12.3.29	273	..	4,506	4·63	208·45	200	
J. Powell, Camperdown	2	2	Jersey	Mt. Violet Queenie's Pet ..	Sr. 2 yrs.	23375	22.2.29	273	17	5,592	5·73	320·34	225	
				Lady Jane of Elouera ..	Mature	10486	6.3.29	273	19	6,422	5·50	353·43	350	
A. Prout, Leongatha	1	1	Jersey	Wattle Vale Wildflower ..	Jr. 3 yrs.	23380	7.2.29	273	..	7,964	5·14	409·33	250	
Messrs. Quigley and Bennett, Yinnar	1	1	Jersey	Kirsty 14th of Jerseyholm ..	Mature	12945	29.1.29	273	17½	5,931	5·92	350·89	350	306, 297, 252

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
F. Raggatt, Tongala	1	..	Jersey	Goldy 2nd of Strathbow ..	Mature	16742	12.3.29	273	12	5,919	5·71	337·68	350	283, 304, 292
J. D. Read, Sprighurst	11	11	Jersey	Boltonia 4th of Springhurst ..	Sr. 2 yrs.	21601	16.1.29	273	12½	5,907	5·44	321·14	225	
				Springhurst Furze 2nd ..	Jr. 2 yrs.	24562	11.3.29	273	11	4 754	6·50	308·82	200	
				Gladiolus 2nd of Springhurst	Sr. 4 yrs.	18929	11.3.29	273	16	7,567	5·89	445·44	325	401, 487
				Springhurst Azalia 3rd ..	Jr. 2 yrs.	24561	18.3.29	273	18	5,720	5·74	328·61	200	
				Springhurst Hakea 2nd ..	Jr. 2 yrs.	24564	20.3.29	240*	17½	4,850	5·35	259·70	200	
				Springhurst Ranunculus 3rd	Jr. 2 yrs.	Vol. 16	20.3.29	240*	15½	3,840	6·27	240·75	200	
				Springhurst Yarran ..	Jr. 2 yrs.	24570	20.3.29	273	19⅓	6,812	6·28	427·94	200	
				Shaster Daisy 2nd of Springhurst	Sr. 2 yrs.	21609	21.3.29	240*	14	4,390	6·54	287·29	225	262
				Springhurst Tecoma 3rd ..	Jr. 2 yrs.	Vol. 16	25.3.29	273	15½	5,313	6·34	337·10	200	
				Cornflower 5th of Springhurst	Jr. 3 yrs.	21606	26.3.29	273	19	7,172	5·82	417·19	250	301
				Aconite of Springhurst ..	Jr. 3 yrs.	21598	29.3 29	273	16	6,276	5·95	373·40	250	417
W. Regnier, Poowong	1	..	Friesian	Harlesden Pauline Mercedes	Jr. 2 yrs.	3164	19.2.29	273	15½	5,310	3·67	195·04	200	
Miss S. L. Robinson, East Kew	2	1	Jersey	Kyora Merry Mike's Mayflower	Mature	9679	13.3.29	273	12	5,693	5·09	290·02	350	198, 289, 289, 326, 185, 348, 281
				Kyora Sultan's Adore 2nd ..	Sr. 3 yrs.	23408	26.3.29	273	..	9,420	5·61	528·61	275	364
W. P. Rogen, Tatura	2	2	Jersey	Ventine	Mature	13773	3.1.29	273	11½	7,144	5·99	428·17	350	364, 431
				Jess of Clarendon Eyre ..	Mature	9576	13.3.29	273	..	10,310	4·66	480·24	350	330, 328
G. Rowe, Kardella	4	..	Jersey	Welbourne Jessie 42nd's Queenie	Jr. 3 yrs.	23421	3.1.29	273	9½	3,639	5·17	188·21	250	160
				Sparklight's Pansy of Welbourne	Mature	21637	8.1.29	273	12	5,102	5·83	297·61	350	263, 318
				Sweet Pansy's Poppy of Welbourne	Mature	13387	21.1.29	273	..	3,945	5·16	203·48	350	180, 268, 306, 311
				Pansy Leaf of Welbourne ..	Jr. 4 yrs.	21636	23.1.29	273	15½	3,491	6·15	214·78	300	203, 238

* Sold before completion of test.

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
R. W. Sadler, Noorat	4	3	Ayrshire	Burnbrae Pendant ..	Jr. 2 yrs.	15792	26.1.29	273	21	6,663	3·99	266·00	200	
				Oakbank Mabel	Mature	15256	28.2.29	273	17	7,605	4·21	320·23	350	
				Burnbrae Sparkling Mozelle ..	Sr. 2 yrs.	15793	5.3.29	273	16½	6,259	4·48	280·42	225	
				Bluebell of Burnbrae ..	Jr. 4 yrs.	14127	6.3.29	273	19½	8,510	4·06	345·43	300	
A. H. Schier, Kernot	9	2	Ayrshire	Scotswood Future 2nd ..	Jr. 2 yrs.	18915	28.1.29	273	22	6,107	4·52	275·93	200	
				Scotswood Mitre	Mature	16623	28.1.29	273	30	7,739	4·36	337·25	350	323, 278, 254
				Scotswood Merline	Mature	15487	1.2.29	273	5	4,764	4·72	224·94	350	221, 191, 153, 249
				Scotswood Bettsie	Sr. 2 yrs.	16602	8.2.29	273	15	4,424	4·52	199·90	225	
				Scotswood Mamie's Laura ..	Jr 2 yrs.	18921	13.2.29	273	17	5,128	4·65	238·31	200	
				Scotswood Better Still ..	Jr. 4 yrs.	15470	13.2.29	273	8½	5,678	3·91	221·81	300	178, 159
				Scotswood Fragrance ..	Jr. 3 yrs.	16609	14.2.29	273	22	5,829	4·21	245·39	250	208
				Scotswood Fairy	Jr. 2 yrs.	18914	17.3.29	273	6	3,891	4·24	165·13	200	
				Scotswood Bonnie	Mature	16604	23.3.29	273	6	5,026	4·81	242·00	350	231, 245
H. A. Schier, Rochester	1	1	Jersey	Princess 5th of Grangelea ..	Mature	18448	30.1.29	273	14	7,716	5·08	392·07	350	413, 429
T. J. Scott, Rochester	1	..	Jersey	Gaiety Girl 14th of Melrose ..	Mature	15012	18.1.29	273	..	5,807	5·00	290·19	350	277, 300, 342
C. H. Sell, Irrewillipe East	2	2	Jersey	Avalon Mercede's Belle 4th ..	Sr. 2 yrs.	22935	25.1.29	273	11½	5,435	4·34	236·04	225	264
				Mendip Pearl 3rd	Sr. 2 yrs.	23464	25.2.29	273	21	7,178	5·75	412·84	225	299
C. L. V. Sharp, Murrabit	1	..	Friesian	Burnbank de Kol Kroons ..	Jr. 4 yrs.	2119	23.1.29	273	21	8,268	3·15	260·11	300	170, 241

STANDARD HERD RECORDS—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
Messrs. Simpson and Son, Lower Fern Tree Gully	4	3	Jersey	Wompini Flower	Jr. 3 yrs.	21665	24.1.29	273	24	5,979	5·54	331·11	250	294
				Wompini Masterman's Meg ..	Jr. 2 yrs.	Vol. 16	28.1.29	273	18	5,157	5·25	270·62	200	
				Harmony of Hill Crest ..	Mature	13745	1.3.29	273	21	5,883	4·74	279·37	350	355, 375, 439
				Wompini Joybell	Jr. 2 yrs.	Vol. 16	4.3.29	273	19	4,950	5·36	265·34	200	
Messrs. Smith and Sons, Woodend	1	1	Friesian	Halecote Oakleaf Fobes ..	Mature	600	15.3.29	273	67	17,555	3·64	639·18	350	299, 466, 642, 693, 585, 677
G. and W. Smith, Fish Creek	1	1	Jersey	Rydon's Dream Girl ..	Jr. 2 yrs.	23448	23.3.29	273	18½	4,853	5·67	275·20	200	
F. P. Stephens, Tongala	1	1	Jersey	Fourshell's Marie's Aerial Queen	Jr. 2 yrs.	Vol. 16	17.3.29	273	20½	6,207	5·44	337·43	200	
O. J. Syme, Macedon	1	1	Friesian	Bainfield Sylvia Topsy 6th..	Mature	1459	13.1.29	273	22	12,293	4·40	540·93	350	423, 480, 423, 346
G. Taylor, Caldermeade	2	1	Ayrshire	Gowrie Park Sherlie ..	Mature	18160	30.1.29	273	5½	8,489	3·98	337·86	350	247
				Eldorado Queenie	Jr. 2 yrs.	15974	5.3.29	273	18½	8,481	4·14	351·52	200	
J. Thompson, Mooroopna North	1	1	Jersey	Silver Belle of Bellaire ..	Mature	17846	4.1.29	273	19	10,147	4·57	463·52	350	397
J. T. Tweddle, Berwick	3	1	Friesian	Burnbank Canary Patch ..	Mature	1516	12.1.29	273	20	6,006	3·81	228·73	350	356, 314, 415
				Winlaton Lassie Patch ..	Jr. 3 yrs.	2970	17.3.29	273	30½	8,189	3·38	276·94	250	323
				Winlaton Secret Princess ..	Mature	2076	28.3.29	273	19⅓	7,575	3·11	235·69	350	360, 294, 356

Standard Herd Records—*continued.*

Owner.	No. completed Test	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
E. J. Vagg, Leongatha	2	2	Jersey	Lady of Queen's Vale ..	Jr. 4 yrs.	19963	30.12.28	273	..	8,267	5·45	450·92	300	431
				Bonnay Golden Pansy ..	Jr. 2 yrs.	Vol. 16	13.2.29	273	18	4,527	5·42	245·18	200	
Mrs. F. E. Vale, Yarram	4	..	Jersey	Sunshine 10th of Brookfield ..	Sr. 2 yrs.	21572	9.2.29	273	13½	5,063	4·66	235·87	225	
				Marimba Briar Rose 3rd ..	Jr. 4 yrs.	Vol. 16	18.2.29	273	13	5,526	4·69	259·36	300	
				Jessamine 3rd of Brookfield ..	Jr. 3 yrs.	21558	19.2.29	273	13½	4,641	4·66	216·33	250	
				Marimba Boronia ..	Jr. 4 yrs.	Vol. 16	3.3.29	273	9½	3,857	5·38	207·38	300	
D. Wadelton, Loch	2	1	Ayrshire	Dalblair Isla	Jr. 3 yrs.	17724	20.1.29	273	16	6 593	3·70	244·25	250	
				Dalblair Anne	Jr. 3 yrs.	15910	21.2.29	273	17½	7,664	3·60	276·27	250	
C. S. Walker, Swan Hill	2	2	Jersey	Warwick Beauty	Jr. 4 yrs.	19012	13.2.29	273	17	7,347	4·49	330·21	300	330
				Warwick Bell Bird	Jr. 2 yrs.	Vol. 16	18.3.29	273	13½	4,604	4·97	228·69	200	
A. Wallace, Bendigo	2	2	Ayrshire	Springdale Dawn	Sr. 3 yrs.	15623	8.1.29	240	18	6,915	4·23	292·62	275	
				Idol of Springdale	Jr. 4 yrs.	14276	12.3.29	273	22½	8,696	3·85	335·78	300	234, 320
Walsh Bros., Lyndhurst	1	1	Red Poll	Victoria Aroma	Sr. 3 yrs.	1651A	17.3.29	273	18½	6,130	4·64	284·51	275	230
Warragul High School	2	..	Red Poll	Victoria Highland Fling ..	Mature	915C	20.1.29	240	23	7,710	3·84	295·74	350	346, 310, 406, 511, 509, 551
				Gipps Annette	Mature	1234A	7.2.29	240	4	6,165	3·64	224·67	350	257
W. O. Westlake, Portland	1	1	Jersey	Cloverfield Merle .. .	Jr. 3 yrs.	23517	23.3.29	273	19	6,254	5·45	340·82	250	315

Standard Herd Records—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lb.
									lb.	lb.		lb.	lb.	
A. C. Willis, Paschendale	3	1	Jersey	Murndal Strawberry Clover ..	Jr. 2 yrs.	24659	21.1.29	273	22½	5,215	4·17	217·25	200	
				Murndal Topsy	Sr. 2 yrs.	24660	22.1.29	273	17	4,476	4·91	219·99	225	
				Carney Dell Gem's Princess ..	Jr 2 yrs.	Vol. 16	20.3.29	273	..	3,510	5·12	179·66	200	
D. C. Wilson, Derrinallum	2	..	Jersey	Queenie 3rd of Springvale ..	Mature	13334	12.3.29	273	11	3,480	5·33	185·64	350	
				Monomeith Kyeema ..	Sr. 4 yrs.	18987	26.3.29	273	12	4,391	5·29	232·41	325	
J. V. M. Wood, Heidelberg	4	3	Jersey	Araleum Felicity	Jr. 4 yrs.	23520	14.2.29	273	29½	8,997	5·25	473·06	300	412
				Clarendon Eyre Lilac Time ..	Jr. 2 yrs.	Vol. 17	23.2.29	210	13	3,235	5·83	188·66	200	
				Clarendon Eyre Pretty Peggy	Jr. 2 yrs.	Vol. 17	16.3.29	180	18½	3,380	5·93	200·52	200	
				Woodside Primrose Day Lady	Jr. 3 yrs.	23527	20.3.29	273	15½	4,897	5·49	268·90	250	182
W. Woodmason, Oakleigh	4	2	Jersey	Blossom 7th of Melrose ..	Mature	17880	29.12.28	273	15½	6,350	5·80	368·43	350	278, 364, 406
				Werribee Fancy Clementine 2nd	Mature	10169	14.1.29	240	18	5,250	5·27	276·55	350	373
				Vanilla 11th of Melrose ..	Mature	7550	22.1.29	273	16½	5,780	5·53	319·91	350	303, 362, 369, 424, 329, 419, 376, 418, 404, 369
				Daisy 19th of Melrose ..	Jr. 4 yrs.	19976	27.1.29	273	19½	6,197	5·39	333·91	300	228

FEEDING FOR MILK PRODUCTION.

By H. C. Churches, Dairy Supervisor.

The Balanced Ration.

The Dairy Supervisor is often asked to explain why certain herds do not give heavier yields. Usually, it is the result of improper feeding, but it is not always wise to express that opinion too frankly. Recently, such a suggestion by me brought forth the indignant retort "Nonsense! There are 300 tons of maize silage, and the cows are given as much as they will eat." It had then to be explained to the inquirer that cows will not give as much milk as they are capable of yielding unless their feed contains sufficient protein, and that it was a physical impossibility for any milking cow to eat enough maize silage to meet her protein requirements from the silage alone. Though maize silage makes a very fine bulk portion of a ration, it is not a balanced ration in itself; that is, it does not contain sufficient protein in comparison to its carbo-hydrates and fat. The nutritive ratio of maize silage is about one to twelve and a half, whilst a heavy milking cow's requirement is a feed with a ratio of one to five and a half or six.

The balancing of a ration is a most important matter, and should be more studied and practised by dairymen, especially by those who hand-feed their cows. A balanced ration is a feed, or a mixture of different foodstuffs, containing the required nutrients in the correct ratio. And while the cow will not argue the point about the components, she will, if they are in the right proportion, demonstrate her appreciation by increasing the output of butter-fat.

In ordinary dairy-farm practice it may not always be possible to get the ration mathematically correct, but it is generally practicable to get somewhere near the mark. On a number of farms in the Western District during the past spring, when there was an extraordinary growth of pasture, it was noticeable that, although the cows milked particularly well early in the season, strange to say, their yields diminished earlier than in other years, in spite of the fact that the feed was still green and in abundance. Short young freshly-grown pastures have a nutritive ratio of about one to three; that of the long rank grasses is a very much wider one. This alone would cause a decrease in the milk yield, but it must also be remembered that the short young pastures are very easily digested and assimilated, while the strong rank growths contain more fibre, and therefore are not so easily digested.

If a cow be given feed containing protein in excess of her requirements for body maintenance and milk production, the excess will serve in place of carbo-hydrate ingredients. That is what actually happens when cows are feeding on short young pastures containing clovers and trefoils, some of which have a nutritive ratio of one in two and a half. Carbo-hydrates, however, cannot take the place of protein. So our chief object, and also our difficulty, is to keep the protein portion of the feed ration up to its required quantity and quality. There is no better balanced ration than that provided by

nature in the early spring—grasses, trefoils and clovers—and there is no cheaper method of maintaining this protein content than by growing clovers, trefoils, lucerne and legumes on the farm, and feeding them either in the form of pastures or as hay.

A delusion under which some people still suffer is that any kind of concentrates fed to a cow will make her milk well. They erroneously imagine that correct feeding is nothing more nor less than feeding as much concentrates as an animal will eat, quite regardless of the constituents of the concentrates and that, in feeding them, one must necessarily be feeding a balanced ration.

A cow of poor-producing nature cannot be made into a heavy-producing one by heavy feeding or in any other way. Her productive capabilities have been inherited in much the same manner as was the conformation of her body or the colour of her coat. On the other hand, a good cow may, by improper feeding, become a poor-producing one. It is only by the feeding of balanced rations that one can obtain the best results. Cows are frequently sickened and their yields lowered by being fed unnecessary concentrates.

Usually, it is only in a few irrigation districts that green pastures can be maintained during the whole length of the year. Consequently, hand-feeding is imperative if the best results are to be achieved. When one does hand-feed, it is very important to balance the ration.

Another important factor in milk-production is the provision of a supply of good water. Nothing reduces a cow's yield quicker than will a lack of good drinking water, even if only for a limited period. One should always be watchful that the water tanks and troughs do not get fouled with the droppings of poultry or wild birds. Young sparrows or swallows may get drowned in the tanks and remain unnoticed; cows will drink such tainted water only when compelled by thirst to do so. This means a drop in the milk supply.

Good Results at Lara.

As an example of what can be accomplished by feeding a balanced ration, I may mention the herd of Mr. F. Austin, of Avalon, a district where the land is not by any means first class dairying country; it is rather what may be described as good merino sheep country. The old station property of Avalon, on the north side of Corio Bay, is mostly flat, and is only a few feet above sea level. It is nominally a sheep-to-the-acre land, and during the past four years the average annual rainfall has been only 12 inches. This is not usually the class of country in which one would expect to find a herd of cows yielding an average of 500 lb. of butter-fat.

For many years, a few pure-bred Jerseys had been kept about the homestead. In 1923, more interest was taken in the little herd, and they were entered in the Government Standard Herd Test. Up till this time, the cows had been treated as are many cows whose owners wonder why they do not give better production. In the following year, however, Mr. Austin secured the services of an efficient and painstaking herdsman, under whose management the production of the herd has improved remarkably. In the Test for the year 1928-29, the average yield per head, with allowances for the nineteen cows, was 516.95 lb. butter-fat.

The cow paddock contains approximately 70 acres, and owing to the light rainfall during the past four years, the pastures have been so poor that it has been imperative to hand-feed the cows all the year round. The method adopted is to feed in the bails at milking time, and the daily ration for each milking cow is as follows:—

Food.	Protein.	Carbo-hydrate.	Fat.
10 lb. oaten hay chaff	·450	4·37	·150
1½ lb. lucerne chaff	·184	·55	·024
5 lb. wheat bran	·560	2·10	·125
1½ lb. linseed meal	.391	·57	·097
1 lb. polly feed	.140	·52	·020
	1·725	8·11	·416

The nutritive ration of such a mixture is arrived at in the following manner:—

Fat .416 × 2.5 = 1.04.

1.04 + Carbo-hydrates 8.11 = 9.15.

9.15 ÷ Protein 1.725 = 5.3.

Thus this feed mixture has a nutritive ratio of 1 to 5.3. In itself, it is a narrow ration, but is widened somewhat in effect by the hard native grass roughage in the paddock.

The highest producing cows—those yielding over one and a half pounds of fat per day—get, in addition to the mixture, from a half pound to two pounds of crushed oats per day, according to the quantity of fat produced. During the summer months, the chaff is damped with water, to which molasses has been added at the rate of 4 oz. per cow per day. This has a slight laxative effect, and helps to make the feed palatable. The addition of the small quantity of molasses does not alter, to any appreciable extent, the nutritive ratio, nor does the crushed oats, as this feed has a nutritive ratio of one in six.

It is sometimes said that "breeding is half feeding." This may not be literally correct, but one thing is certain, and it is that the best possible results will never be got from any cow—no matter what her breeding or her actual capabilities may be—unless she is properly fed.

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2. Once established, no need for further sowing.
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4. Splendid for killing all weeds.
5. A very fattening herbage.

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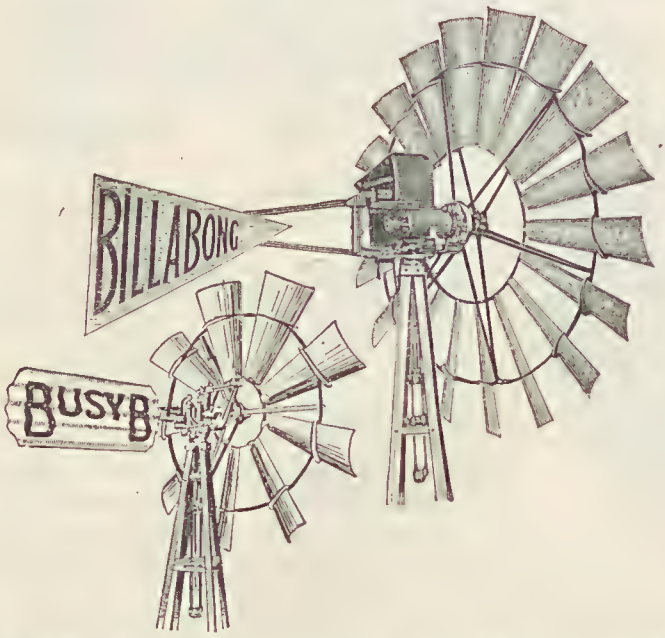

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